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Freight Rate Increases

PROTESTS against the 10 per cent. interim increase in railway, dock, and canal charges in force from Monday last were inevitable, and seem mostly to have taken their expected form. They are epitomised in a Federation of British Industries letter to the Minister of Transport. This deplores the "almost automatic passing on to industrial traffic" of the increasing costs of the British Transport Commission, and regrets that the recent railway wages award was not definitely linked with the attainment of greater efficiency, as recommended by the court of inquiry into railway wages. It predicts further loss of railway traffic to the roads, with consequent subsidisation of the railways by the taxpayer and harm to industries dependent on railway prosperity. Then follow complaints of inferior service to railway users, and of excessive staffing, duplication of management, and continued retention of redundant facilities. As we remarked last week, no constructive suggestion is made for a short-term solution of the Commission's desperate financial difficulties, but only a sweeping allusion to economies. All this is familiar enough. With Government interference in the wage negotiations (as this journal remarked at the time) it is remarkable that the Chairman of the Railway Executive, Mr. John Elliot, and his colleagues achieved what they did; the wages award was in fact linked with an undertaking to enhance efficiency (in the form of the "efficiency committee")—which is now being implemented. The other accusations were rebutted last week by Mr. Elliot in a spirited answer to the F.B.I. Complaints in general as to efficiency he described as sweeping generalisations, and he pointed out that the railways (whose difficulties are due largely to the war) do not "throw brickbats" at rolling-stock manufacturers and others late in their deliveries of railway material—whose difficulties are due largely to rearmament. He gave pertinent answers on excessive staffing (that more traffic is being handled than pre-war with less staff, allowing for changed working conditions), on duplication of management (that it is vested in the relatively small Railway Executive, decentralised in the Regions), and on retention of superfluous facilities (regarding which he quoted figures on branch-line closing already discussed in this journal). Members of Government corporations should, however, remember Sir Harold Butler's maxim that "constant criticism is the life-blood of any public service."

Taxation of Profits

THE adverse effects of the budget proposals to increase income and distributed profits tax were stressed last week by Sir Robert Sinclair, the retiring President, at the annual general meeting of the Federation of British Industries. One effect, he said, would be difficulty in provision for replacement costs in industry; when reserves were subject to high rates of both income and profits tax, with replacement costs rising rapidly, the effect was that of "a levy on industrial capital, and the ratio of industrial saving to expenditure was reduced." The budget proposals, he considers, "will greatly accentuate the . . . difficulties of providing the finance which industry needs," and in some cases (not inconsiderable, as the proposals may increase the amount which industry has to find in due course by £170 million) these difficulties will be aggravated by the complete withdrawal of the allowances. This would bring nearer that "bad day for productive industry . . . when its issued capital was entirely in the form of fixed interest-bearing securities" and hinder the provision of risk capital, as necessary today as ever before. Sir Robert Sinclair points out that distributed profits last year were little greater (3 per cent.) than for 1949; wages, however, rose 6 per cent. Few will disagree that industry should be able to provide capital for its own maintenance mainly from its own resources, looking to outside capital for financing new enterprises; but it is hard to see how this is going to be possible in the light of the budget.

The Transport Factor in Planning

IN a recent speech, Lord Latham, Chairman of the London Transport Executive, urged the need for proper regard to transport facilities in planning new towns. In London, said Lord Latham, the railway is essentially one of the main supports of transport, for even with a greatly improved road system the traffic is far beyond the capacity of the most intensive practicable road service. As, however, railways were a heavy permanent commitment, development plans must have the railway pattern as their basis—not the reverse. There was little likelihood of having all the improvements put forward by the London Plan Working Party ready when needed, as the British Transport Commission was fettered by restrictions on the availability of national resources. It was sometimes contended that peak-hour transport facilities serving the new towns should not be improved lest travel away from them for work should be encouraged and the aim of the planned community thereby defeated. The B.T.C. and its constituents, however, had a statutory duty to provide efficient and adequate transport. The continued encroachment of business on the West End threatened to upset permanently the balance essential to a better-planned London; return of the City to its old importance as a business centre would enable traffic to be spread more evenly over available services. It would be a real disservice to Londoners if staggering were relaxed.

Commercial Train Services

IN a recent memorandum to the Chairman of the Railway Executive, the Council of Institute of Directors suggests ways of improving the commercial medium- and long-distance services of British Railways. Attention is drawn to post-war accelerations in some Continental countries (in which the mileage booked at 60 m.p.h. last summer

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exceeded that on British Railways); these are given as reasons for similar accelerations in Britain, in which the "stock excuses put forward by the railways" (including poor quality coal, and arrears of locomotive and track maintenance), it is suggested, are no longer valid. In so doing, the Institute underestimates the many difficulties of British Railways, largely the result of their all-out war effort. Much, however, could be achieved by abolition of timetable recovery margins, discussed in an article in our March 9 issue. Having regard to the frequency of British express trains and to the many runs booked at 50 m.p.h. and over, the number of mile-a-minute runs is no certain criterion. One useful suggestion is made in the memorandum: that of fast trains earlier in the day from London to provincial cities, allowing of business before lunch and a return the same day, as was advocated in this journal a year ago in a series of studies of long-distance business train services.

Overseas Railway Traffics

FURTHER substantial advances were recorded in Antofagasta (Chili) & Bolivia traffics during both weeks of the fortnight ended April 6, so that at the end of the current 14 weeks aggregate receipts were up by £488,040, at £1,353,050. The improvement in the first week of the fortnight under review amounted to £89,710, at £137,450 and in the following week traffics at £125,190 were £82,110 higher. Following successive increases in receipts over a considerable period, Paraguay Central traffics for the 40 weeks ended April 6 were up by G2,340,469, at G8,111,344. During the fortnight ended April 6 traffics were G372,109, as compared with G328,991 for the equivalent period of 1949-50. Though railway operating revenues of the International Railways of Central America were up by $51,829, at $1,233,459 during February, there was a $35,611 fall in net income, which amounted to $152,310. Aggregate operating revenues since January 1 have improved by $80,536 to $2,548,803, but net income at $332,819 compares with $417,755 for the previous year.

British Transport Commission Statistics

BRITISH Railways passenger receipts for the second four-week statistical period of 1951 showed a decrease of 3 per cent. over the preceding year. No analysis of this is yet available; but as regards January, for which receipts were nearly 6 per cent. down on last year, the details of passenger journeys for the calendar month are given with other figures for (four-week) Period 2. (It is incidentally a pity that the time bases of these statistics cannot be standardised.) In January, 1951, although full-fare journeys were 40, and excursion 25 per cent. up on the previous January, monthly returns were down 42 per cent. with season and workmen's tickets much the same; total passenger journeys were 1 per cent. down. Similar results may be expected for Period 2 and the calendar month of February. One explanation of the disproportionate fall of passenger revenue against bookings may be a loss of medium- and long-distance traffic to the roads. Freight tonnages for Period 2 show increases of 3·4 and 1·5 per cent. over 1950 for mineral and coal traffic respectively, which were to be expected in the light of the reduced average length of haul; merchandise tonnage fell 3·5 per cent. There was a 33⅓ per cent. increase over Period 2 of last year in road haulage receipts.

Institute of Transport Examination Scheme

IN 1926, seven years after the Institute of Transport was founded, its first examinations were held. Mr. D. R. Lamb, Past President of the Institute, and Chairman of the Examination Committee, at the Institute last Monday, traced the history of its examination scheme—proposed by Lord Ashfield in 1920—whose syllabus was framed mainly by Philip Burtt, after his retirement from the North Eastern Railway. At the first session there were 58 candidates at three centres; next month 1,300 candidates would be examined at 46 centres throughout the world. The passing of the Institute "finals" might yet become a generally recognised academic distinction, like that of the "finals" of the old-established engineering institutions. There was an outstanding need to-day for a wider appreciation by all ranks of the nature of the problems facing the transport industry. The Institute takes great pride in the encouragement it is giving to young men in the country's key industry to realise the importance of its contribution to the national welfare. It has under review a syllabus based on Sir Osborne Mance's concept of an all-embracing "Economics of Inland Transport," a step in line with the trend towards unification.

Tobacco Traffic for a Tanganyika Railway?

THE approved extension of the Tanganyika Southern Province Railway from its present terminus at Nachingwea, to Lumesule Juu, some sixty miles further inland, and well placed for further extensions, will enable it to tap an area where sixty-thousand acres have been set aside for tobacco growing. It will also bring it much nearer to the existing African co-operative tobacco plantation near Songea, whose crop is now conveyed by road to Lake Nyasa, thence by lake steamer, and train through Nyasaland, to the coast at Beira, 900 miles away. It is reported from Dar es Salaam that by 1960 the Southern Province line is expected to carry a total traffic of 140,000 tons, excluding produce of the Overseas Food Corporation. Most of this tonnage will be of tobacco, timber, and cassava. In view of this promising prospect and the ultimate possibility of coal and Central African traffic in addition there is confidence in Tanganyika in the future of the line and a readiness to bear the territory's share of the estimated losses of £1,750,000 on the line and Mtwara port during the next ten years.

A New Railway in Arabia

FROM the shores of the Persian Gulf a standard-gauge railway being steadily pushed ahead into the interior of Saudi Arabia is now nearing Riyadh, the capital, a town of some 100,000 inhabitants. The project, described elsewhere is this issue, is being undertaken by the Arabian American Oil Company (Aramco), based at Dhahran on the Gulf, which holds oil concessions granted by King Ibn Saud. The company's needs might have been met by road transport only, but the king, reputedly a railway enthusiast, insisted on a railway which would not only serve the oilfields but also his capital and would even realise his ambition of a line linking the Persian Gulf and the Red Sea. In deference to his wishes, Aramco agreed to build a railway and recover its cost from the Government later. Saudi Arabia now regains the railway communication which it has lacked for more than 30 years, the Maan to Medina section of the famous Hedjaz Railway having lain derelict since Lawrence's exploits in the 1914-18 war. Even if the abandoned part of the Hedjaz line were restored, however, its narrow-gauge (3 ft. 5½ in.) would preclude through running on to an extension of the new Trans-Arabian railway through Jeddah.

Transport Accident Rates

REGARDING the figure of fatal accidents on United Kingdom air lines in 1950, Sir Hartley Shawcross, the Attorney General, has said "That works out at six passengers (killed) for each 100 million passenger-miles flown, a smaller number than for any other form of transport." As we have been recently reminded, train accidents do unfortunately occur, but British railways may be justly proud of their small number of fatal accidents. If the same accident rate as that on British air lines had occurred on British Railways and London Transport Executive railways, then, in one year, 1,500 passengers would have been killed. In fact, the average rate on the railways for the four years 1946-49 was 0·15 per 100 million passenger-miles, compared with the average figure of 6·65 for air travel, a ratio of 43½ to 1 in favour of the railways. If the statistic of passenger journeys per passenger killed in train accidents is compared with the similar statistic for air

travel (of passengers carried per passenger killed) the average ratio for the same four years appears as 41·2 million to 20·2 thousand, or 2,040 to 1 in favour of the railways. It is not suggested that the railways remain satisfied with their present measures for the prevention of accidents, but there is no doubt of the relative safety of the two methods of travel.

Higher Passenger Fares

THE necessity for raising some at least of the many fares on the various passenger transport undertakings operated by the British Transport Commission made itself clear only recently. Even so, as stated in an editorial article in our last week's issue, the general rise in prices made some increase inevitable, despite the unwillingness some weeks ago of railway spokesmen to advocate a substantial flat increase in railway fares because of the sensitiveness of rail traffic to road competition. The need for the increases is made abundantly clear in the statement by Lord Hurcomb, Chairman of the B.T.C., appended to the new Passenger Charges Scheme, 1951, of which details are given elsewhere in this issue. This scheme is one of those which have been in preparation since the passing of the Transport Act, 1947, and which were envisaged in that Act.

Two characteristics of the new scheme are apparent: the relative promptitude with which it has been lodged, and the skill with which the incidence of the proposed increases has been laid on "inevitable" passenger travel. As to the timing of the scheme, the main consideration seems to have been the urgency of the B.T.C. financial problem. Hence the lodging of the scheme almost on the heels of the London Charges Scheme, and almost simultaneously with the exercise by the Minister of Transport of his powers to raise freight charges. Whilst the former must cause much administrative inconvenience, the latter perhaps is unfortunate from the psychological standpoint; against this, it may be that increases in railway charges in such quick succession are necessary to shock the public into a sense of the urgency of the situation, and they may show that the Commission means business. The importance of every month of delay (which may see further price increases) is stressed. The scheme, after two months allowed for statement of objections, is due to be heard before the Transport Tribunal in June; at the earliest, it might be approved, with or without modification, to operate from August, though some estimates give the autumn, or even the end of the year, as the earliest date.

The least "inevitable" travel by rail is holiday travel and the relatively small proportion of full-fare journeys; both these categories are highly susceptible to motorcoach competition. Ordinary single railway fares outside London, which yield only 12 per cent. of total British Railways passenger receipts, are not increased. Monthly return (30 per cent. of total receipts) fares are to be raised some 10 per cent. This, apart from being a blow to many holiday-makers, and especially families, will certainly increase the public *animus* against the railways which now (rightly or wrongly) exists. In view, however, of the increasing proportion of the public which can travel only at weekends and in the summer, it is possible that the transfer of patronage to the road will be restricted by the inability of road transport operators to accept further peak period traffic; doubtless the Commission has this factor in mind. Further realism is shown in details such as the Continental boat express fares from London to Dover and Folkestone which are prudently left unchanged. The only justification for these survivals, which have no parallel in the boat train fares to other ports, of a century ago—they date from early South Eastern Railway days—is that they are "what the traffic will bear," like the cross-Channel steamer fares with which they are usually "hidden" in through bookings. The scheme incidentally does not cover marine fares, though certain inland water (lake steamer) fares may be increased.

Those who must travel by rail are hit hard: indeed, if the money was to be got, there was no alternative. Nearly all fares in and around London are increased, as are season tickets on British Railways generally. The decision to withdraw shift workers' fares will arouse bitter opposition, as, to a lesser extent, will abolition of some other concessions. The tidying up of anomalies, such as the abolition of bonus mileage, may be overdue; but it will be interesting to see the effects; in the case, for instance, of Severn Tunnel bonus mileage, receipts, as well as the pockets of medium- and short-distance users of the tunnel, may be affected to a considerable extent. Lord Hurcomb's statement refrains from prediction or comment on the subject of excursion and similar fares. These are a matter for the Railway or London Transport Executives, to whose judgment opportune price fixing may safely be left.

In the main, the Commission—and the Railway and London Transport Executives who carry out a large proportion of the preparatory work—has made the best of a very bad job. It was not to be expected that the scheme could be popular. There remains, however, the suspicion that arithmetic has played too great a part in the presentation of the scheme. Although improvements of all kinds in railway passenger services are in progress or planned (including, for instance, electrification of the London Tilbury & Southend line), and these have been announced from time to time, there has been a certain failure to administer jam with the powder. Perhaps it was felt that the bare facts of the situation were enough to convince all critics.

Financial Recovery of U.S.A. Railways

AN article in our March 30 issue showed that the U.S.A. railway position improved in 1950 and especially in the second half of the year. The January statement of revenues and expenses reveals a remarkable recovery this year from the poor opening of 1950. Total results for the Class 1 railways are given in the table below, with the percentage increase on January, 1950.

	January, 1951	January, 1950	Percentage increase
	(Millions)		
	$	$	
Operating revenues ...	849	657	29
,, expenses ...	645	547	18
Taxes	109	64	71
Net railway operating income (earnings before charges)	78	33	137

The improvement of 137 per cent. in net railway operating income was spread unevenly over the States. The railways in the Eastern District had an increase of 80 per cent. and those in the Pocahontas and Southern regions one of 50 per cent., while in the Western District, across the Mississippi, the increase was no less than 432 per cent.

With the exception of the Bangor and Aroostook line in New England, all railways earned more money from freight, which produced $172 million of the total increase of $191 million in operating revenue. The downward trend of passenger receipts since 1946 was checked at the end of 1950, when the effect of movements due to the Korean war and rearmament programmes was felt. In January, the railways took $8·4 million more in passenger fares than they collected a year ago, an increase of 12 per cent. The total passenger revenue was, however, only $78 million, or 45 per cent. of the increase in freight revenue; on 17 minor railways there was actually a decrease in passenger business.

The state of emergency declared by the President has intensified economic developments which have been taking place in the Western States during recent years. The Santa Fe had the highest net railway operating income of all the lines in January at $5·9 million. The Pennsylvania, which used to be *facile princeps*, was down 1 per cent. to $4·8 million. It had the largest operating revenue of $84 million, but was handicapped by an operating ratio of 85 per cent., in contrast to a ratio of 69 per cent. on the Santa Fé. Other western lines to do well were the Burlington, which doubled its net railway operating income; the Rock Island, which trebled its income; and the Southern Pacific and Union Pacific, which both quadrupled theirs.

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Evidently, the Interstate Commerce Commission has taken these results into account in considering the application by the railways for a 6 per cent. rise in freight rates, estimated to produce $470 million a year. On March 12, the Commission authorised, as an interim measure, a 4 per cent. advance in the Eastern District, a 2 per cent. advance in the Southern and Western Districts, and a 2 per cent. advance in rates on traffic passing between the three districts. These increases, which are subject to various reservations, represent a 2·4 per cent. overall increase, estimated to yield $205 million a year, and they took effect on April 4.

For the ten weeks to March 10 the volume of freight traffic was 20 per cent. ahead of 1950. The railways had an average daily shortage of 36,000 wagons, of which three-fourths were box wagons. These shortages will recur until new wagons now on order are delivered in large numbers. The Pennsylvania Railroad alone ordered 20,000 all-steel wagons and hoped to have 11,000 in service by March 31. It expects to receive the remainder at an average rate of 1,000 a month. The whole 20,000 will cost $114 million, and would form a solid train from New York to Baltimore, say 200 miles. The deal is being advertised as the biggest wagon order in railway history, but the Association of American Railroads would like 10,000 new wagons to be put into traffic each month until the railways, as one system, can meet the growing demands for transport.

Victorian Railways

THE Victorian Railways Commissioners, of whom Mr. R. G. Wishart is Chairman, begin their report for the year ended June 30, 1950, by pointing out that despite shortages in manpower and equipment and the serious all-Australian coal strike in July and August, 1949, 8,409,301 tons of goods were carried during the year, a figure greater by 253,808 than that for 1948-49. The abolition of petrol rationing adversely affected country passenger traffic, as also did cancellation of train services due to the coal strike; a 10 per cent. fall was therefore recorded; on the other hand, suburban passenger traffic showed an increase of nearly nine million journeys. The increased goods tonnage was due to the plentiful harvest, greater production by secondary industries, and increased exports, also a higher output of brown coal and briquettes. Record quantities of fertilisers and wheat from country elevators were carried, and the tonnage of fuels of various kinds was also greater than in the previous year. Gross revenue (on railways only) thus increased by £4,776,660, from £17,273,808 in 1948-49 to £22,050,468, the highest amount ever earned by the system. As well as increased traffics, however, higher rates and fares and a payment of £1,687,828 by the Treasury to reduce the burden of interest and other debt charges combined to swell this record figure.

Working expenses rose steeply from £17,815,540 to £19,983,597, due mainly to an increase of about £1 million in salaries and wages to meet the cost of living, and £¼ million in cost of materials and supplies. Net revenue from the railways (apart from electric tramways and road motor services) therefore totalled £2,066,871; the figure including road services is however only £2,042,952, and, as the corresponding figure for the previous year was a deficit of £566,683, the increase was £2,609,636. Taking into account interest charges, exchange on interest payments and redemption, and contribution to National Debt Sinking Fund, together amounting to £2,229,008, there was a deficit on the year's results of £186,056 as compared with £2,734,119 in 1948-49. Some of the principal results for the two years are tabulated below:—

	1948-49	1949-50
Average miles of line	4,712	4,692
Train-miles	17,351,775	17,549,489
Passenger journeys	176,555,074	182,101,351
Goods and livestock, tons	8,859,016	9,125,140
Operating ratio, per cent.	103·14	90·78
	£	£
Passengers, parcels, etc., revenue	7,369,393	8,122,409
Goods and livestock, revenue	8,596,154	10,816,864
Total earnings	17,273,809	22,050,468
Working expenses	17,815,540	19,983,597
Net earnings	541,732	2,066,871

Essential services were maintained during the strike, as 82 locomotives had been converted to burn oil to meet just such an emergency, and wood fuel was used in others. During the year deliveries of rolling stock to meet the acute shortage had hardly begun, though large quantities were on order. Of the 1,000 standard goods trucks ordered in the previous financial year only 146 came to hand, but orders were placed for a further 2,250 and the railway shops at Newport also continued to turn out these vehicles. Four "N" class goods engines, four 153-h.p. and two 280-h.p. diesel railcars and two trailers were also received. On June 30, 1950, however, 185 steam, 17 electric, 27 diesel-electric (17 main-line and 10 shunting) locomotives, 9 153-h.p. and 11 280-h.p. railcars, and 3,104 goods wagons were on order, at a total cost of £18,000,000. Trials with pulverised brown coal in an "X" class engine proved satisfactory.

The re-grading and doubling of the Gippsland line between Yarragon and Longwarry were continued, and one section of new line was opened for traffic. Preliminary measures were also taken in connection with the electrification between Dandenong and Tarralgon, and it is for this section that the 17 electric locomotives are intended in the first instance; the Gippsland line serves the brown coal industry. Sanction was obtained during 1949-50 for the electrification of the Newport South-Geelong line, and for the doubling of certain sections of it.

Sharing the Traction Load

ADVANTAGES may be enjoyed by all concerned when the electric traction load is combined with supplies to industrial and other consumers. Their nature and origins were discussed in a paper presented to a Sectional meeting in Delhi of the World Power Conference by the late Mr. F. Lydall, Consultant to Messrs. Merz & McLellan, and Mr. C. M. Cook, General Manager, Traction Department, The English Electric Co. Ltd. In countries with a.c. electrification it is sometimes the practice to have a separate railway network with its own low-frequency power station, and sometimes to convert the supply from the industrial grid in frequency-changer substations. It will be noticed from our summary of the paper on another page that so far the trials of frequency-conversion by means of mercury-arc rectifiers, that have been conducted for some time at Basle, do not justify large-scale use of such a system. Rectifiers would improve the efficiency of conversion compared with motor-generator sets, but the extensive a.c. electrifications in Sweden and the United States find it preferable to take power from public supplies through motor-generators for frequency-conversion rather than to generate their own.

The rectifier removed the necessity for d.c. railways to operate low-frequency power stations, as was once the practice owing to difficulties in the design of rotary-converters for a 50-cycle input. In Great Britain the railway power stations at Stonebridge Park, Durnsford Road, and Deptford East were legacies of this earlier practice. Stonebridge Park has been rebuilt already as a 50-cycle station, exchanging power with the National Grid through two 10,000 kVA. transformers. Both Durnsford Road and Deptford East are the subject of negotiations with the British Electricity Authority, the intention being to reconstruct them with 50-cycle plant to supply the whole suburban area of the Southern Region and to furnish a large amount of power for the Grid.

An example of a railway power distribution system forming the nucleus of supplies for industrial and other consumers is seen on the Pietermaritzburg-Glencoe Section of the South African Railways. The railway power station at Colenso was equipped for 50-cycle generation, and each 3,000 V. d.c. traction substation served also as a distribution centre from which 3-phase a.c. at 50 cycles could be supplied to other consumers. This arrangement has proved of great benefit to the development of the area concerned, as well as to power users of all categories in respect of favourable charges per unit. Such a policy deserves study in all parts of the world where electrification is improving communications and thereby stimulating industrial and social development in areas where once amenities were few.

The Legibility of Station Names

(From a Correspondent)

THE many Press comments following the remarks of a judge in a provincial Court on the "passionate anonymity displayed by railway stations" has again brought into prominence the problem of rendering station names easily legible. The matter may be considered from its three main aspects—the writing, siting, and lighting of the station names.

The writing covers not only the size and character of the letters but also their spacing and colour, especially the contrast between the background and the lettering, which has an important influence on legibility.

In choosing a suitable size for the letters much depends on the way in which the nameboards are to function. When one considers the wide range of letter sizes in use varying from the immense letters on the nameboards at Crewe to the tiny nameplates (or name *slips*) often attached to lamps it seems desirable for some more definite principle to be adopted. The traveller is more likely to be able to read the name if there are numerous medium-size nameplates dotted about the station than if one nameboard only is fixed on a platform, even though the letters may be bold. So long as the type chosen is bold and clear, the exact style is largely a matter of taste and does not greatly affect legibility.

Colour and contrast are of considerable importance. Sir John Parsons, the ophthalmologist, recently described a journey in the Midlands where most of the station names were illegible to him, and he complained that they consisted of white letters on a pale red background, and that the letters were too small. Though there may be much to be said for Regional colour schemes, they should not interfere with the proper contrast essential for name signs. There is no need to go to the extreme of white on black or black on white if a reasonable contrast is preserved—the sharper the better.

In deciding where to place station names so that they can be easily seen, two classes of passenger must be borne in mind—those who wish to see the name of a passing station to give them some idea of their whereabouts, and those who, having stopped at a station, wish to confirm that it is the station they require. To satisfy the latter is presumably the more important, but by no means easy under *all* conditions. It is hardly to be expected that every passenger in a full suburban train will be able to see the station name when the train is pulling up. Where then should the nameboards, or nameplates, be fixed, to be legible by the maximum number? They should be well above the heads of persons on the platform and yet not so high as to be invisible to all in a compartment except those sitting close to the window.

The frequency of the names is important. In the past it seems to have been thought sufficient to provide one nameboard on each platform at the end approached by a train, but such an arrangement would not now be considered adequate unless supplemented by smaller nameplates at intervals along the platform. Perhaps the most satisfactory solution under intensified traffic conditions is the method used on the London tube, where the station name is posted at frequent intervals along both walls of the tunnel. Almost any passenger will have some view under these conditions, but the method is applicable only to a tube line where the station tunnels are of uniform construction and more or less uniformly illuminated. On the platform of an ordinary surface station the differences in roof construction and diverse arrangements of station buildings give rise to so many obstructions that a system of posting names would have little chance of being effective.

To cater for the traveller in passing trains is less important, though many people like to have an idea of the towns through which they pass by train. Large nameboards might be fixed at each end of all platforms instead of only at the "approach" end. Passengers sometimes look out when halfway through a station, and then are too late for the nameboard if it occurs only at the beginning of a platform.

If the names are set only slightly at an angle the possibility of seeing them from a passing train is greater. Before the end of last century the Midland Railway fixed double nameboards in the form of an obtuse-angle V, so that the name faced both ways. Other railways have used this fixing with good effect, and it seems a pity that it has not been adopted more generally. We might adopt more frequently the Continental practice of displaying the station name boldly on the ends of station canopies, giving a transverse view for passengers. Why also should not the names on signalboxes be set out in much larger letters than is usual?

Adequate lighting seems to have been largely neglected. The Board of Trade, when it had some control of railways, evidently attached importance to this, for one of the regulations was that each lamp should display the station name, thus ensuring its legibility at night.

The old-fashioned square lantern carrying an oil burner had on its front pane a translucent glass plate inscribed with the station name in lettering illuminated by the burner behind. Although the illumination given by the oil lamp was meagre, the device might have been fairly satisfactory had there been many of these lanterns all along a platform but they were usually at least 50 ft. apart so that a passenger whose compartment came to rest between two lamps had little chance of reading the name.

When gas lamps with spherical globes began to come into common use, the station name could not be satisfactorily written on the globe. To comply with the regulation, small glass panels with the name in translucent lettering were hung immediately in front of the lamps, but separate from them. Sometimes an improvement was brought about by suspending from each lamp two nameplates facing obliquely in either direction along the platform. In recent years an effective name sign has been incorporated in opal or perspex reflectors, designed in elongated form to display the name and ensure that it is well lighted.

As passengers seem instinctively to look towards a lamp when trying to ascertain the name of a station after dark, this is an additional reason for displaying the name clearly near a lamp. In view of the many lamp types in use—with and without globes, sometimes with deep reflectors and sometimes with open mirror reflectors—it is perhaps the most desirable arrangement to provide a nameboard or nameplate independent of the lamp but close to it and adjusted to receive maximum illumination. In the South of England it has lately become fairly general to fix nameplates of a size that gives good legibility, and in such a position relative to each lamp that the name is always lighted at night. This scheme improves the legibility by day and night.

If every platform had a V-shaped illuminated sign in bold characters fixed preferably at the entering point, the middle, and the end, passengers would have a reasonable chance of catching sight of the name. If it had been missed in passing, it could easily be seen when the train came to rest by lowering the window and looking out.

The London & South Western Railway about 30 years ago, fixed V-shaped box signs at intervals along the platforms, with bold lettering illuminated by internal lamps. On an island platform the signs were of diamond shape, with the name facing in four directions. This scheme was successful in that one could always see the name either from the compartment or by putting one's head out of the window, but the signs were hardly large enough to catch the eye in passing, and the device never became generally adopted—possibly in part because of its considerable cost.

What attitude will be adopted by British Railways? Will they standardise some improved system of illuminated station names, or will the cost again hinder development? The public address apparatus already installed at many interchange stations is more foolproof than reliance on passengers seeing where they are. Possibly, audible indication of whereabouts may be the method of the future, rendering the station name less important, but, for the present, why not have both? The legibility of the station name might well have a high priority among railway amenities to which we are looking forward.

XUM

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

Timetable Complication

March 19

SIR,—With reference to your correspondent's letter in your issue of March 16, surely the best remedy is the introduction of the 24-hr. clock on British Railways?

As is well known, this method is used with conspicuous success on every European railway system; it is foolproof and can be quickly mastered by anyone of average intelligence. One feels that it is only traditional British insularity and conservatism which has prevented the adoption of this excellent measure.

Yours faithfully,
E. E. SMITH

Castle View, Stagshaw Road, Corbridge

Transport—A Liability for Ever?

April 9

SIR,—Lord Lucas, Parliamentary Secretary to the Ministry of Transport, made a remarkable speech at a dinner given by the Institute of Traffic Administration on April 4 [referred to in our April 13 issue]. It was remarkable because of its mixture of severe criticism of the attitude of the present Government administration ("economise in your operations instead of passing on your extra costs to the heavily burdened consumer") and something like despair ("the transport system of this country, in the main, is a liability for ever"). The criticism about readiness to pass extra costs on to the consumer was general, it is true, but Lord Lucas made it quite clear that it embraced the nationalised part of transport.

Lord Lucas's criticism is perfectly sound. It drives at the roots of the financial policy of the Transport Act of 1947 which imposed on the British Transport Commission the duty of making its undertakings (taking one year with another) pay their way, including the important element of compensation to previous owners, without making sure that those undertakings would be provided with the means and the equipment during the necessary period of transition and development to establish their economy on a sound basis. In the result, the consumer is paying through the nose for service which is so inferior as to put on him a great burden of expense which nowhere appears in the public transport accounts, besides loss of business.

Few, I imagine, have been as critical as I of operational inefficiency, or of the fatal tendency (which became ministerial policy just before the war) to solve the railway problem by an artificial price policy for which powerful sections of the trading community were primarily responsible. I have contended for many years that the railways could have saved themselves by the incorporation of the road motor vehicle in their own operations and saved millions a year, without nationalisation, if they had not been tied by restrictions which became unnecessary when they lost their virtual monopoly; at the same time they could have preserved what was necessary in their rates structure, at a much lower level. Instead, the policy adopted is designed deliberately to increase the burden of transport costs on the consumer, without assurance that the works of the British Transport Commission will become more solvent. Operating economies of real value are as far off as ever.

The transport problem is not a financial problem, nor a price problem, in its essence: it is an operating problem of a technical nature. It is not an administrative problem within the competence of civil servants and accountants, but a practical one requiring an intimate knowledge of passenger and freight manipulation, at all levels, and from the angle of the trading community as well as of transport operators. The present organisation of the British Transport Commission is unsuitable for the solution of the real problem. The Executives should be merged into a kind of General Staff, organised like the Board of Admiralty, and charged with the planning and development of co-ordinated services, setting the Regions the pattern of movement of people and things from place to place, and giving the Regional Officers—likewise to be responsible for the provision of services by all forms of transport—much greater autonomy than they have today. They should, however, be jointly responsible for the overall execution of the plans set them by the General Staff.

Transport as a whole is far too expensive; present methods will inevitably make it more expensive. It can be made much cheaper and more efficient, and can be made to pay its way at a lower level of total cost. It is not too late.

Yours faithfully,
FREDERICK SMITH

65, Hallowell Road, Northwood

The Future of British Transport

April 6

SIR,—The recent announcement by the Postmaster-General of increased charges by his Department comes at an appropriate time to dispose of the suggestion of your correspondent, Mr. P. Collins, that the profit of the Post Office is a result of its services being carried on economically.

Or can it be that the Government has quickly seen the political advantage of his scheme for all transport services to be absorbed by the General Post Office, and is losing no time in acquiring a still larger apparent surplus on its postal and telephone services to meet the deficit of its Transport Commission?

Yours faithfully,
J. C. PALMER

The Chestnut, Manor Road, Twyford, Hants

Treatment of Railway Sleepers

February 1

SIR,—The British railways use about 3,000,000 sleepers annually, most of which are of European origin. Many, however, are of Canadian Douglas fir. These cost some $4 each in Canadian funds c.i.f. British ports.

Before these sleepers are laid they are impregnated in pressure vessels with a preservative to increase their service life. In Canada and the United States, the preservative used is a mixture of creosote and coal tar, or creosote and fuel oil, because these mixtures are cheaper and more effective than creosote alone. The British railways are using creosote for the preservation of most of their sleepers but other preservatives for a substantial proportion of them.

During the past half-century, United States and Canadian railways experimented with all the preservatives thought likely to be suitable, and have kept careful service records on millions of sleepers on their lines. It was found that creosote mixtures gave the most lasting results, and they have been adopted exclusively for many years now. There were more than 47,000,000 sleepers treated in the United States and Canada during 1949, the latest year for which the figures are available; 99·9 per cent. of them were impregnated with creosote mixtures.

Canadian and United States railways are buying British creosote in large quantities; some is delivered to the Pacific coast of North America, entailing an ocean haul of 9,000 miles and the payment of Panama Canal tolls. This creosote with large quantities made in Canada and the United States, is used in the preservation of their sleepers in preference to any other preservative.

Some 25 years ago, when I was stationed in London as Timber Commissioner for the Province of British Columbia, I called on a number of railway engineers and visited several plants where railway sleepers were being treated. In none of them was the most efficient method

being used, and I believe that little has been done to improve the situation.

I was successful in 1926 in persuading the then Southern Railway to purchase 3,000 Douglas fir sleepers creosoted in Canada. These sleepers were installed the following year on the company's line at Hinton Admiral. At the same time, Douglas fir sleepers treated in England by the Southern Railway were installed at Sway. All the latter were removed in 1940 after some thirteen years service. The last report that I have seen, made in 1948, states that the sleepers treated in Canada were in "excellent condition" after twenty-one years service, and it was expected that several more years service could be expected from them.

The above facts are contained in a report by the Forest Products Laboratories at Princes Risborough of the Department of Scientific & Industrial Research. This clearly demonstrates the superiority of Canadian methods of creosoting Douglas fir sleepers. The life of such sleepers in Canada and the United States averages approximately 25 years. With a more equable climate, better roadbeds and lighter wheel-loads, it would be reasonable to expect even longer life in Great Britain

The same service is being obtained from millions of Western hemlock sleepers on the Canadian and United States railways. The higher moisture content of the hemlock before seasoning does not affect the life of the creosoted sleeper, and there need be no fear of locking moisture in the centre of the sleeper, as has been thought by some.

To sum up, it seems to me that by the introduction of proper methods which would entail some new plant and modification of others, and an extension of the length of the treating cycle and the use of creosote mixtures, the British railways can obtain a greatly increased service-life from their sleepers, thus effecting large economies and saving considerable amounts of dollar exchange.

Yours faithfully,

LOREN L. BROWN,
Chairman, Advisory Committee of the Canadian Government Forest Products Laboratories, Ottawa

5830, Cote St. Luc Road, Montreal

British Railways Standard Locomotives

March 21

SIR,—In designing British Railways locomotive No. 70000, was it really necessary to abandon the symmetry of line that has always been characteristic of British engines?

The last two Pacifics of the former L.M.S.R. showed how an engine could be built to the limits of the loading gauge without sacrifice of symmetry.

The cab end of No. 70000 is particularly ugly. This could be rectified by adopting the cab end arrangement traditional on the locomotives of the Canadian Pacific Railway. These have the cab side plating carried down to form the steps. The rear edge of the plating is a straight vertical line. From the front of the bottom step the plating is carried up in a sweeping forward curve to the running board.

Is it too late to adopt this arrangement on the "Britannia" class locomotives of British Railways?

Yours faithfully,

G. V. O. BULKELEY

Uvongo Beach, Natal South Coast, South Africa

Economics of Long-Distance Electrification

SIR,—In answer to Mr. L. H. Leyvraz's letter in your February 9 issue, I find that an error crept into my original manuscript sent to you and published in your December 1, 1950, issue. The sectional area of the return feeder should read 0·202 in.^{2}

Mr. Leyvraz is right that a considerable reduction in the cost of the single-phase a.c. overhead system is possible if the return feeder and booster transformers can be omitted, which, in fact, is the case in most countries—witness Switzerland, Austria, Germany, Hungary, and now France. However, in Sweden it was found that, due to the unusually high earth resistance and the large substation spacings, the use of return feeder-cum-booster transformers proved desirable to prevent interference with communications circuits. In case of doubt probably the best plan would be to allow for return feeder, etc., in the estimates, but install it only if it proves necessary.

Regarding Table 8, Mr. Leyvraz's instructive paper "Elektrische Traktion mit Einphasenstrom von 50 Hz": Bull. Ass. Suisse Electr. T. 41, 1950, No. 20: came to my notice only after publication of my article.

Table 8 needs amendment in the light of the most recent developments, and I thank Mr. Leyvraz for the information tendered in his letter. It should be pointed out, however, that some of the $16\frac{2}{3}$ hz. motors built in Switzerland are even lighter than 8·82 lb./h.p. The 465 kW. 1-hour rating/$16\frac{2}{3}$ hz. motors of the class Re 4/4 Bo-Bo locomotives of the Swiss Federal Railways weigh only 1,900 kg., or 4·1 kg./kW., corresponding to barely 3 kg./6·7 lb./per h.p./. see H. Werz, "Les Locomotives Légères Type Re 4/4 des Chemins de fer Fédéraux Suisses" Bull. Sécheron No. 18F, 1946.

Yours faithfully,

S. A. VINCZE

73, Karepa Street, Wellington, N.Z.

Return Tickets

April 16

SIR,—There has recently been correspondence in *The Times* on the advantages of the alternative routes available on some return tickets. There are now proposals to raise passenger fares. It is suggested that rail travel could be made more attractive, and some of the sting taken out of the proposed increases in fares if the three-day availability of the outward half of return tickets were extended to 15 days for return tickets available for one month, and, say, 45 days for those available for three months.

Yours faithfully,

E. E. D. HEDLEY,
Lt.-Colonel

Fairfields, Longcross, Surrey

Closing of Branch Lines

April 3

SIR,—I am surprised that Mr. Frederick Smith, in your March 30 issue, should throw ridicule on details while ignoring my main premisses, namely that: for the successful financial working of local services and branch lines, (i) fast regular-interval services must be provided, and (ii) economies must be effected by (*a*) reducing all possible stations to unmanned halts, and (*b*) on branch lines, cutting down signalling to telegraph line clear or less, and doing without refinements necessary for more important lines.

I referred to the Southern Electric country services and not the Eastern Region Shenfield line and am entirely out of sympathy with the present type of "planner".

I have read with great interest the summary of Mr. Arkle's paper to the Northern Section of the Institute of Transport. In none of his estimates does he consider economies possible by reducing stations to unmanned halts, or simplifying the signalling, though this would often make all the difference between profit and loss. Taking his paper as a whole, it appears that wherever the regular interval service has been adopted, it has been a success. His remarks on unsuitability of Sentinel or diesel vehicles owing to their lack of flexibility to meet traffic fluctuations is contrary to normal experience. The reasons for his conclusions would be interesting, though presumably it depends on the size of the unit and its power to haul trailers.

May I again ask how many of the advocates of the closing of branch lines and local services ever use those services? The answer I suspect to be none, mainly because they have reached that stage of life when they are conveyed to and from the nearest centre in their own or their official cars.

Yours faithfully,

H. L. HAWKER

7, Princes Square, W.2

XUM

THE SCRAP HEAP

Pipe of Peace

. . . It is pleasing to record one occasion, when the joint executives of the three railway unions were meeting the Railway Executive in the fight for an increased wage for the salaried and wages grades. Big Ben had boomed eleven at night. The majority of the contestants were getting hungry, weary, and in some instances a bit irritable . . . Despite the then apparently tragic fact that no satisfactory offer was forthcoming, there was no stampede or wild threat made by either side. Common sense prevailed and the Chairman of the Railway Executive no doubt helped to preserve the cleanliness of the fight.

Never did he lose the dignity that befits a gentleman. His ready smile and his pipe of peace will not be forgotten by those of us who were there . . .—*H. R. Whitby in "The Railway Review."*

Wotton Tramroad Locomotive

On March 29 one of the two original geared locomotives used on the Wotton or Brill Tramroad of the Duke of Buckingham arrived by road from Northamptonshire at the Neasden Works of London Transport. It is to be renovated and stored at Neasden, and eventually placed on permanent exhibition. The line was originally a private concern, but the working was taken over in 1894 by the Oxford & Aylesbury Tramroad Company with a view to extension (never undertaken) to Oxford. The Metropolitan Railway worked the line as its Brill branch from 1899. It was abandoned in 1935. The geared locomotive was built by Aveling & Porter at Rochester in 1872 and was basically similar to that firm's very successful traction engines. It worked at Brill until 1894. A single cylinder, 7¾ in. × 10 in., drives the crank shaft which in turn rotates the countershaft on which is mounted a flywheel and pinion. Motion is imparted to the 3-ft. driving wheels by a pitch chain passing round the pinion chain wheels. The Industrial Locomotive Society has saved this engine from being scrapped; Mr. W. O. Skeat, of the Stephenson Locomotive Society, was also concerned in the final negotiations.

British Railways Boxing Championships

The semi-finals and finals of the British Railways Amateur Boxing Championships will be held at the Royal Albert Hall, London, on Tuesday, April 24, commencing at 6.30 p.m. Mr. John Elliot, Chairman of the Railway Executive, will preside and will present the awards to the winners. The victors of the quarter-finals held at Liverpool and York in March will compete, and there will be bouts at all the recognised weights. The 40 contestants include the reigning British Railways fly-weight, welter-weight, middle-weight and heavy-weight champions.

Ten Per Cent. on Rail Freights

Mr. Barnes was at pains to deny, when he recently sought the advice of the Transport Tribunal about the proposal to raise railway freight charges by 10 per cent., that he had reached any conclusions himself either about the increase or about the need for examination of the proposal in public hearings. Both matters, however, were foregone conclusions. The Tribunal proffered the advice that everybody—save possibly the Minister—had expected; the 10 per cent. increase imposed from Monday, April 16. So, without benefit of public examination, a major increase in British costs is brought into effect. How easy the process has become: the unions make their claim; one Minister tells the Railway Executive to meet it; a few weeks later, another Minister signs the order and sheds the load on to the consumer. There used to be an argument that if monopolies were inevitable they should be publicly owned. If there are any who still hold this view, they might reflect on this episode.—*From "The Economist."*

Clearing Out?

The Hotels Executive, which employs 16,000 and takes nearly £15,000,000 a year, may soon undergo a change in its constitution.

Consideration is being given to transferring the restaurant car and buffet side of the undertaking to the Railway Executive, leaving only the 50 hotels to the Hotels Executive.

It is possible that the Government might go out of the hotel business altogether. They lost nearly £50,000 on this side in 1949—the last year for which accounts were published—and are expected to show a bigger deficit when the B.T.C. publishes its next balance-sheet soon.—*From "The Evening News."*

Tramway or Railway?

At Lyons, alongside the International Fair buildings, is a section of track which is disused for most of the year, but comes to life first as a railway and then as part of the local tramways during the Fair.

Before the public opening of the Fair, railway wagons are placed on the track, and exhibits unloaded into the Fair buildings. When the Fair is open the trams use the track to bring visitors right up to the Fair, but after it, the trams cease, and the railway wagons again appear.

The "common user" track is built to railway standards, with counter-sunk rails which at the tramway end lead on to normal tramway tracks.

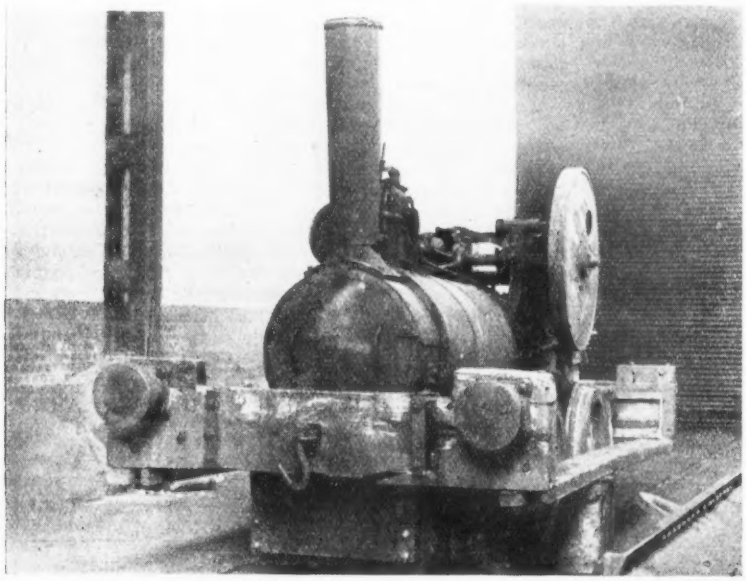
Biff and Buff

(A reply to A. B.)

Come, bury, man, your dark suspicions
About our buffers' dispositions.
You speak of discord and of wrangling
Between the times when they are dangling
Extra trains and corner seats,
Circular tours and other treats
Before the whole world and his wife:
External bliss—internal strife.

Poor Biff is certainly no beauty
His face is made for heavy duty.
But he's merry as a trivet,
(I've known him since he was a rivet.)
And as for Buff, his heart's pure gold
Though fashioned by a chisel—cold,
So though they wear no frills or bows
They're solid, cast-iron P.R.Os.

H. O.



Wotton Tramroad locomotive to be preserved (see paragraph above)
Photo] [G. Allienz

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

SOUTH AFRICA

New Narrow-gauge Locomotives

Delivery has begun of twelve narrow-gauge locomotives ordered in May, 1948. Five, classed "NG-15," have arrived and are being assembled at Uitenhage. The locomotives, all of which will be put into service on the narrow-gauge lines in South-West Africa, were built by the Société-Anglo-Franco-Belge des Ateliers de la Croyers of Belgium at an estimated pre-devaluation cost of £14,000 each.

Advice has also been received of the shipment of two of an order for seven locomotives of class "N.G.G. 16," which are being built in the United Kingdom by Beyer Peacock & Co. Ltd. Four will be placed in service on the Cape Midland System and three in Natal. Those intended for the Cape Midlands will be assembled in Uitenhage, and the three for Natal, at Durban. They have a tractive effort of 18,850 lb. at 75 per cent. boiler pressure and a wheel arrangement of 2-6-2 + 2-6-2. The total wheel-base is 43 ft. 3 in. and the weight in full working order, 59 tons 2 cwts.

CANADA

New Lines

Although not proposing new railway construction projects, the Royal Commission on Transportation stated that there was still room for expansion of railway facilities in Canada. Most, if not all, would be carried out by the Government or the Canadian National Railways.

Proposals for the greater use of existing facilities or the construction of new lines made to the Commission during its inquiry included: full-scale tests of the usefulness of the Government-built Hudson Bay Railway to Churchill, Manitoba; construction of a 160-mile line by the C.N.R. from Sherridon to Lynn Lake, Man. (the Commission said that the C.N.R. had this under consideration); completion of the C.P.R. line between Valmarie and Nankota, Saskatchewan; operation of the C.N.R. line from Neidpath to Swift Current, Sask, completed in 1931; completion of the C.N.R. and C.P.R. branch lines to Swift Current; and extension of the C.N.R. Barraute line in Quebec to Lake Chibougamau. The Commission made no specific recommendations concerning them.

No Change in Staff Negotiation

The Royal Commission on Transportation has recommended no change in the method of negotiation between railways and employees. The Commission said that it would be a "grave mistake" for the Board of Transport Commissioners to take part in fixing wages. If it had to deal with this question, it would be impossible for the board to perform adequately its duty of fixing rates at reasonable and just levels. The companies and employees should continue to negotiate their problems under the Federal Industrial Relations & Disputes Investigation Act, which provides for bargaining and conciliation procedures.

ARGENTINA

Unique Refrigerated Vehicle

To enable it to cater adequately for the considerable fresh meat traffic from Colonia Sarmiento to Comodoro Rivadavia, the Patagonian National Railway arranged for the construction in the workshops of the General Belgrano Railway of a special diesel-mechanical vehicle. The passenger accommodation of a single-unit Ganz diesel railcar formerly used on branch line services on the General Belgrano Railway was removed and replaced by the bodywork of a six-wheel road refrigerated van.

Refrigerated van converted from railcar, for Patagonian National Railways

UNITED STATES

New Coaches for the Pennsylvania

The Pennsylvania Railroad has ordered 64 streamline all-stainless steel coaches from the Budd Company, Philadelphia, to renew completely the "Congressional" and the "Senator." The coaches will provide two 17-coach trains between New York and Washington for the "Congressional," and two 15-coach trains for the "Senator"; both trains are electrically hauled.

A major innovation on the "Congressional" will be an entirely new type parlour car including seven private rooms, each accommodating five passengers, designed for business conferences, family groups, and other small parties desiring maximum privacy. Meals may be served in these rooms. The order includes reclining seat coaches each with a smoking lounge, parlour, dining, coffee shop and observation cars.

Each of the new "Congressional" trains, operating between New York, Philadelphia, Wilmington, Baltimore, and Washington, will accommodate 827 passengers. Each train will have dining facilities for 112 in a full-length twin-unit dining car, and in a coffee-shop car providing lunch counter, and table, service and a refreshment lounge with lower prices. There will a lounge in the centre of the train and an observation lounge car for Pullman passengers.

Each of the new "Senator" trains, operating between Washington, Baltimore, Wilmington, Philadelphia, New York and Boston, will accommodate 767 passengers with dining and coffee shop accommodation for 92. They will be almost identical with the "Congressional" trains, except for the private room car. Telephone service to all points in the United States and most other countries will be available on all four trains *en route*.

FRANCE

Wagon Agreement with Germany

The agreement recently concluded between France and Western Germany for the pooling of wagons, mentioned in *The Railway Gazette* April 6 issue, has now been extended to include 100,000 wagons, either country accounting for 50 per cent.

Freight Rates Increased

Railwaymen resumed work on Saturday, March 24, after the 48-hr. general strike. The men obtained an increase of fr.1,800 (about 36s.) a month in the minimum wage and an adjustment of higher rates of pay. As the increase in

wages and in the cost of coal would be equivalent to an additional charge of fr.20,000 million (about £20,000,000) a year on the S.N.C.F. budget, it was decided with the approval of the Minister of Transport to raise freight rates by 10½ per cent. beginning April 1. The rise in rates is expected to cover the increase in wages. Passenger fares are not to be increased on the ground that any rise would lead to increased competition with motorcar traffic.

European Railway Tours

The International Union of Railways is organising circular tours in Western Europe for the period April to October. Special international trains named "European Friendship" (L'Amitié Européenne) trains will be run at half-fares. They will be fitted with the latest improvements and will include sleeping and restaurant cars. Interpreter guides will be provided. The tours are to last six days to a fortnight. The principal cities visited will include Cologne, Hamburg, Frankfort - on - Main, Vienna, Milan, Zurich, Brussels and Paris. Fixed prices for the tour include transport, meals, hotels, guides, and excusions at the various stops *en route*.

IRELAND

Tests of U.S. Coal

The results of analysis, at Inchicore, of samples of American coal imported for railway use have been described as "favourable." Although the volatile content at 37 per cent. is "a little high" the ash content—about 6·5 per cent.—is low, compared with 12 per cent. ash content in recent samples of through coal and briquettes from the United Kingdom.

A committee has been set up to protect C.I.E. coal dumps against thefts, which cause substantial losses annually. Notices are being exhibited throughout the system asking all staff to help in finding efficient means of combating the thieves.

AUSTRIA

New Semmering Tunnel

Work on the second Semmering Tunnel, the subject of an article in our March 30 issue, has progressed so far that the meeting of the galleries was officially celebrated on March 21. The work is scheduled to be completed in October, 1952.

Publications Received

The Industrial Gas Turbine. By E. C. Roberson. Technical Trends Series. London: Temple Press Limited, Bowling Green Lane, E.C.1. 7½ in. × 5 in. 162 pp. Illustrated. Price 8s. 6d.—As a potential rival to steam and diesel-electric traction on railways, the gas turbine is now coming to the fore, and it is appropriate that the frontispiece of this book should be a photograph of the British Railways gas-turbine-electric locomotive No. 18000 which has had so promising a *début* on the Western Region. The treatment is thorough; after chapters on the early and more recent history of the gas turbine, the author discusses compressors and turbines, modern practice and its economics, and future developments, with the text elucidated by photographs and drawings. An appendix lists industrial gas turbine plants in Britain, France, and Switzerland, and the book is completed by a useful bibliography and an index.

The Metropolitan Railway. By C. Baker. South Godstone, Surrey. The Oakwood Press, Tanglewood. 7¼ in. × 5 in. 76 pp. Illustrated. Paper covers, 7s. 6d., cloth, 9s.—The nucleus of the Metropolitan was the three-and-a-half mile line between Paddington and Farringdon, opened in 1863—the first urban underground in the world. Traffic was heavy from the start, and extensions followed to east and west; those to Moorgate and Brompton became part of the Inner Circle, in conjunction with the District. It was, however, the little St. Johns Wood extension, opened to Swiss Cottage in 1868, which was ultimately to change the "Met" into almost a main line; under Sir Edward Watkin's chairmanship, the "Met" steadily pushed it out into rural Middlesex and Bucks, reaching Harrow in 1880 and Aylesbury in 1892. It might have reached Worcester, or even the Mersey, but instead, as part of his "Manchester to Paris" scheme, Watkin decided to bring the Manchester Sheffield & Lincolnshire south to the Metropolitan and run over it to London. There was friction over the arrangement until a joint agreement in 1906, by which time the "Met" had inaugurated electric traction to Uxbridge and on the Circle. Electrification and the Metropolitan's own housing estates rapidly increased traffic. The greatest traffic performance was during the Wembley Exhibition of 1924, when 11,500,000 passengers were carried. Mr. Baker has ably succeeded in the difficult task of compressing the complex history of a fascinating, enterprising, and individualistic line. His illustrations give a good indication of the diversity of the locomotive and carriage stock, and he has not neglected the Great Northern & City line and the "Met's" road services.

Scrap Means Steel.—The need for scrap to implement the national steel production programme is the subject of a booklet, illustrated by photographs, published by Thos. W. Ward Ltd, Albion Works, Sheffield. This publication describes the extent to which the scrap metal industry is organised, and it is intended primarily to interest those whose operations do not bring them into touch with the economies of steel production, but who could materially assist if aware of the urgency of increasing scrap returns.

The Economics of Industrial Paint Finishing.—The fact that preparing the surface and applying the paint cost three times as much as the paint, is stated in this I.C.I. Paints Division publication which shows that paint finishing costs affect 85 per cent. of all industry. The booklet emphasises that in determining the standard of paint finish to be applied to an industrial product, the points of view must be considered of the purchasing, the sales, production and shipping departments, the works accountant, and the managing director. Attention is also drawn to the need for balancing sales effectiveness and durability against the cost of paint finish. Some directions are indicated in which paint finishing processes can be reviewed so as to achieve the highest standard of finish at the lowest cost.

National Gazetteer of the Divisions, Districts, Groups and Depots of British Road Services. London: The Road Haulage Executive, 222, Marylebone Road, N.W.1. 10½ in. × 8 in. 152 pp. Paper covers. Price 2s. 6d. net.—This gazetteer has been published to assist all users of British Road Services in making enquiries and placing orders. It contains full particulars of the organisation, including a list of 1,330 British Road Services depots in town alphabetical order.

Onazote Insulating Material.—The use of Onazote as an insulating medium is described in a brochure issued by the Expanded Rubber Co., Ltd., 675, Mitcham Road, Croydon, which also contains illustrations of its application to rail and road containers for conveyance of fish and meat and other perishable goods. Information is given on the method of machining, together with installation instructions, including the use of adhesives and hot applications by the use of bitumen and so on. Physical and chemical properties of Onazote are also described.

Reconstruction of the Hellenic State Railways in 1950.—The text of this illustrated brochure issued by the Hellenic State Railways is in Greek and English, and the many photographic illustrations of tunnels, bridges and buildings are excellent. The year began with re-establishment of rail communication between Salonika and Athens, after which effort was concentrated on completion of the rebuilding of the Salonika-Florina line, with its many heavy engineering works, and the many important works at Salonika, where three out-of-date passenger stations and freight yards have been replaced by a modern passenger terminal, an extensive classification yard, and locomotive depot.

Passenger Charges Scheme, 1951

Submission to Transport Tribunal by British Transport Commission of draft scheme covering London Transport and British Railways passenger fares

THE Transport Act, 1947, Section 76, lays down that the British Transport Commission within two years of the passing of the Act on August 5, 1947, must submit to the Transport Tribunal for confirmation schemes for the charges to be made by the Commission. The two-year period was extended a further two years by the Minister of Transport in July, 1949. The first charges scheme, known as the London Area Passenger Charges Scheme was confirmed by the Transport Tribunal last year, when details of its provisions and of the hearings before the Tribunal were given in current issues of *The Railway Gazette;* and subject to certain modifications the scheme came into operation on October 1, 1950.

No charges scheme embracing goods traffic has yet been submitted to the Tribunal: the increases in railway freights effective from May 15, 1950, and April 16, 1951, were authorised under the Act by the Minister of Transport after consultation with the permanent members of the Transport Tribunal. Similarly, no increases in passenger traffic charges have been made since nationalisation in 1948 under the procedure last described: the London Area Passenger Charges Scheme and the scheme described below, the Passenger Charges Scheme, 1951, are respectively the first and second series of changes, or applications to make changes in fares, since 1948. The 1951 passenger scheme was lodged on April 7. Hearing before the Transport Tribunal is due to begin in June.

Area Affected

The means of transport operated by the B.T.C. and the passenger traffic charges embraced by the 1951 scheme may be classified as: (*a*) London Area, subdivided into (1) London Transport excluding coaches, (2) London Transport coaches, (3) British Railways London lines excluding the London Tilbury and Southend line of the Eastern Region, and (4) the L.T.S. line; (*b*) British Railways outside the London Area; and (*c*) general, *i.e.* certain fare changes proposed but not requiring specific authority under the scheme.

The London Area for the purposes of the scheme covers: (*a*) railways within the London Passenger Transport Area defined in the L.P.T. Act, 1933; (*b*) those parts of the L.T.S. line not included in (*a*); and (*c*) railways extraneous to (*a*) within an area roughly as follows: Luton - Dunstable - Cheddington - Aylesbury - High Wycombe - Maidenhead - Slough - Windsor - Ascot - Woking - Guildford - Redhill - East Grinstead - Tunbridge Wells - Sevenoaks - Otford - Wrotham - Meopham - Gravesend - Tilbury - Southend - Shenfield - Bishop's Stortford - Royston - Hitchin. This gives an area of both British and London Transport Railways within a radius of some 25-40 miles of London. In accordance with Section 77 (2) of the Transport Act, which provides that "a charges scheme may revoke or amend any previous charges scheme," the 1951 scheme proposes supersession and revocation of certain provisions of the London Area Passenger Charges Scheme.

Principal Changes Proposed

The pattern of charges for the London Area is the same as that authorised by the London Charges Scheme, but it is proposed that the average level of charge be raised 20 per cent. As regards railways outside London, the present fares structure is substantially retained. Ordinary single fares will not be raised. Such concessions as monthly and cheap day return tickets will continue to be granted within the statutory maximum, but at a higher rate, for which the B.T.C. has authority and will retain it. Standard season ticket rates will be raised by about 10 per cent., and as far as practicable sub-standard season rates will be raised to this standard. Workmen's fares will be replaced by a rather higher scale of early morning return fare available to all persons travelling before specified hours. There are minor adjustments of excess baggage rates. Details of the main proposed changes are as follow: —

(*a*) *London Area:*

(1) *London Transport (excluding coaches)*: Ordinary single fares to be increased from 1¼d. a mile to 1½d.; journeys of up to one mile to cost 2d. Early morning return fares by rail to be increased about 20 per cent. Early morning single fares by road to be increased so that the early morning single *plus* the ordinary single fare for the return journey substantially equals the corresponding early morning return fare by rail. Season ticket rates to be increased about 20 per cent.

(2) *London Transport ("Green Line") Coaches:* Fares to be increased from 1¼d. to 1½d. a mile. In certain circumstances, minimum fares may be charged. The term London Transport Coaches does not include omnibus services between London termini.

(3) *British Railways London (excluding L.T.S.) Lines:* Ordinary single fares not to be changed. Day return fares to be increased from 1¼d. to 1½d. a mile. Early morning return fares and season ticket rates to be increased about 20 per cent. Monthly return fares to be increased about 10 per cent. (See under (*b*) below.)

(4) *L.T.S. Line:* Ordinary single fares to be increased from 1¼d. to 1½d. a mile; journeys of up to one mile to cost 2d. Early morning return fares and season ticket rates to be increased about 20 per cent.

British Railways Fares

(*b*) *British Railways Outside London Area.*

Ordinary single fares to remain substantially at the present rate of slightly under 2½d. a mile. The present erratic scale to be made consistent, including abolition of bonus mileage for Severn Tunnel and so on. Continental boat train fares between London and Dover and Folkestone to continue at present level. Early morning return fares to be introduced generally at the rate for the London Area for journeys up to 20 miles; over 20 miles, these fares will operate only where workmen's fares were formerly granted; the outward journeys by early morning return tickets to be completed by 8 a.m. Monthly return fares to be increased by about 10 per cent.; these, being calculated at a single-fare-and-one-third for the return journey, can be increased within the statutory standard at the discretion of the Commission.

Season tickets to be at the rate proposed for the London Area; increases generally will be less than 20 per cent., as rates at present are higher than in the London area. No season ticket rate may be increased more than 25 per cent. No fare may be increased more than 50 per cent. except where the increase is 1½d. or less. The Commission may determine fares at its own discretion (within the statutory maximum rate per mile) for sporting and other events for which special services are provided. No increase is sought for sleeping-car supplements, seat reservation fees, and so on.

(*c*) *General; Other Changes Proposed:* Certain changes are proposed which do not require specific authority under the scheme; these are: (i) Abolition of shift workers' fares; (ii) abolition of traders' season tickets; (iii) abolition of bulk travel and commercial travellers' tickets discount; and (iv) bringing of sub-standard fares generally into line with standard fares with limitations on increases as shown under (*b*) above. Many cheap day and excursion fares may be raised. Cross-Channel fares to the Continent and to Ireland are not covered by the scheme. Certain lake steamer fares however may be increased.

Rise in B.T.C. Costs

Simultaneously with the publication of the 1951 scheme, the Chairman of the B.T.C., Lord Hurcomb, issued a statement on the reasons for seeking increases in passenger charges. This points out that since the Commission submitted, in November, 1949, its application for freight rate increases (which took effect from May, 1950) and,

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in February 1950, the London Passenger Charges Scheme, the level of costs on which these submissions were based has risen rapidly. Some of these increases, such as in petrol and fuel oil, include those falling on road passenger and freight undertakings owned by the Commission, which as far as possible are being covered by increases in charges, but only after a considerable time-lag. Even so, including the railway wage increases earlier this year, it is pointed out that since the end of 1949 B.T.C. annual outgoings rose by over £40 million. In addition, the time-lag between rises in costs and the putting into force of increases in charges is estimated to have cost the B.T.C. some £15 million in 1950. The statement then outlines the history of the Commission's accumulated deficit of £40 million, which has precluded the formation of a general reserve as required by the Transport Act.

Nevertheless, in the latter part of 1950, when the freight rate increases had been effective since May, and the London Passenger Charges Scheme was becoming (in October) effective, "it was," states Lord Hurcomb, "possible to feel that a position of financial equilibrium was in sight." Towards the end of the year, however, the position again deteriorated, and early in 1951 the B.T.C. was faced with a deficit on its net revenue account in 1951 of some £25 million. Hence the application to the Minister of Transport for an interim increase of 10 per cent. on railway freight and certain other charges which took effect from April 16. Although this is estimated to yield £20 million in a full year, as regards 1951 it will yield less than three-quarters of that sum. The Commission therefore felt obliged to seek some increase in passenger fares.

Level of Passenger Fares

Passenger transport, it is stated, compared with pre-war is one of the cheapest commodities available in this country. Since nationalisation there have been no railway passenger fare increases outside London, and cheap fares have been re-introduced. The net increase authorised under the London charges scheme was only £2·7 million a year, although London Transport fares as a whole had since 1939 risen less than main-line railway fares. The total passenger revenues of the Commission's activities affected by the new passenger charges scheme are about £165 million a year. The rise in the cost of passenger travel on British Railways and London Transport since nationalisation is therefore about 4d. in the £, less the effect of cheap fare facilities re-introduced.

Even to-day, the statement continues, London Transport fares average only 43 per cent. up on pre-war, and fares in the London Area (including British Railways suburban lines) 51 per cent. British Railways statutory passenger fares have risen only 55 per cent., though certain pre-war cheap facilities have not been introduced. Figures are then quoted for the rise of commodities and articles which the Commission has to buy. To these, states Lord Hurcomb, must be added the additional cost of petrol and fuel oil resulting from the budget, which will add £3¼ million to the Commission's outgoings.

Effect of New Scheme

The effect of the 1951 passenger charges scheme proposals is a yield of about £17 million in a full year. If the changes are approved, the average cost of travel will be about 75 per cent. above pre-war in the London Area and 90 per cent. outside London. As far as can be estimated (Lord Hurcomb's statement continues) the proposals for the London Area should produce gross receipts just sufficient to meet the full cost of the services concerned, including contributions to Central Charges and reserve. As regards services outside London, the alterations proposed within the statutory categories of fare "are designed to secure . . . not more than the maximum volume of net receipts which can reasonably be expected from these particular sources."

Meanwhile, it is pointed out, the increases cannot be effective for some months, and their justification must be sought on the financial position expected for 1952. There are no grounds, the statement continues, for assuming either that costs will decline or that traffics will increase by 1952. The trends are in the reverse direction. In considering the financial position of rail transport outside London, the trends of costs are the same as in London, and there are no grounds for assuming any improvement in the existing level of traffic receipts, even if fares were reduced.

RECOMMENDATIONS ON CLAIMS BY C.I.E. STAFF.—The Chairman of the Joint Industrial Council of C.I.E. has announced that the council had ruled on the application of the Transport Salaried Staffs' Association that the payments for overtime, Sunday duty, night duty, superior duty and work performed on public holidays, recommended by the council in October last, should be calculated for the retrospective period on the basic remuneration only. The association had claimed that retrospective payment should be made at the increased rate from last July. The council also made a recommendation that after three years on the maximum standard rate Class 3 stationmasters should be paid a personal allowance of £25 a year, to apply from last July. This allowance is to rank for pension purposes. The council also ruled that Class 2 stationmasters should be paid a special allowance of £10 a year during the time that they supervise a clerical officer in receipt of £450 a year or more. This is also to apply from July 1 last. After more than three hours' private session the council announced its decision on applications by the T.S.S.A. on behalf of stationmasters, goods agents, and male and female clerical staff employed by C.I.E. The following are some of the council's recommendations:—The existing "on call" allowance is increased by 7½ per cent. from January 1 last; staff members who are married or have one or more dependents and who are obliged to take lodgings away from home on transfer are to be paid a lodging allowance of £3 a week for not more than ten weeks; all time worked on a Sunday shall be paid for at time-and-a-half. The council also altered or inserted new paragraphs in clauses dealing with night duty and overtime. New claims were submitted on behalf of 141 supervisors employed by C.I.E. The main claims are for annual leave "on call" allowance and expenses. The council's findings on these claims will be announced on April 27.

PROFESSIONAL ENGINEERS APPOINTMENTS BUREAU.—During 1950, names in the register of the Professional Engineers Appointments Bureau fell from 541 in January to 409 by the end of the year. Total registrations to the end of the year were 1,947. The main work of the bureau has been with engineers already in employment, and most of those unemployed are aged over 45. The real shortage is stated to be particularly of men with highly specialised experience and outstanding academic qualifications. A major difficulty in placing engineers is the location of employment, due to the housing shortage. Except in special circumstances, it has been the policy of the bureau not to put engineers forward for posts carrying salaries below the minimum figures shown on their application forms, but many engineers in the register specified minimum salaries much in excess of those offered by employers. Although at present the demand for professional engineers exceeds the supply, the bureau states that employers could help by not demanding qualifications and experience beyond those actually necessary for their requirements. Vacancies notified totalled 1,111, a considerable proportion of overseas vacancies being in the Middle and Far East, India and Pakistan. Some difficulty was experienced in finding candidates willing to go to these countries. There is always a steady demand from registrants for employment in Canada, Australia, South Africa and Europe but few vacancies are notified from these countries, employers usually requiring specialised experience. More vacancies might be filled if the upper age limit stated by employers was increased. It would help the bureau if employers able to offer apprenticeships, or other recognised training, would notify particulars. Generous donations have been received from employers, but as the registration and appointment fees of the bureau are very low, total revenue was not sufficient to meet the expenses actually incurred.

BRITISH ALUMINIUM COMPANY RESULTS.—The total net assets of the British Aluminium Company group as at December 31, 1950, show a growth of £2,543,886 at £20,012,595. Net current assets have increased by £2,331,966 to £6,291,244, and these with fixed assets and investments of £13,721,351 (£13,509,431 in 1949) make up the total. The consolidated profits are given as £2,112,771 (£1,803,595) and a dividend of 10 per cent. (the same) is proposed. The 2,000,000 ordinary £1 shares issued at 34s. receive a dividend of 3 per cent. for 1950.

Traction Loads on Industrial Power Networks

Benefits to railways and other consumers obtained by joint use of an electricity generation and distribution system

WITH the extension of electric supply systems the necessity for electrified railways to generate and distribute their own power is reduced. The possibilities of combining the load for railway traction with supplies to industrial and other consumers on the same system were the subject of a paper presented earlier this year at a sectional meeting in Delhi of the World Power Conference by the late Mr. F. Lydall, Consultant to Messrs. Merz & McLellan, and Mr. C. M. Cock, General Manager, Traction Department, the English Electric Co. Ltd. Some extracts from the paper are given below. It will be reproduced in full in the bound Transactions of the Conference. The British National Committee of the World Power Conference has its offices at 201-202, Grand Buildings, Trafalgar Square, London, W.C.2.

Reviewing existing practice, the paper recalled that in Germany and Switzerland the practice of generation at low-frequency single phase in special railway power stations for the 16⅔-cycle traction systems was considered justified on economic grounds. Sweden generated similarly at 15 cycles for the iron ore railway in the North, but electrifications since 1923 have taken power from the 3-phase National Grid at 50 cycles. Power is distributed to the track conductors as single-phase a.c. at 16⅔ cycles from frequency-changer substations. It was considered that the comparative inefficiency of the substations (average efficiency in service about 84 per cent.) was fully offset by the following subsidiary advantages: Elimination of the burden of providing special low-frequency power stations and erecting a double set of transmission lines throughout the country; the use of the motor-generators in the substations as a means of regulating the voltage of the three-phase grid system; and the wide spacing of the railway substations, with the maintenance of constant contact line voltage.

United States Practice

In the United States the Pennsylvania Railroad a.c. electrification purchases all the power required from public companies. One such company, located in Philadelphia, supplies most of the electrification requirements from frequency-changing stations located adjacent to large 60-cycle, three-phase generating stations. For example, this company at its Richmond station in Philadelphia generates power at 13,200 volts, 60 cycles, three-phase; converts it to 13,200 volts, 25 cycles, single-phase through motor-generator sets, each having 30 kW. capacity; and sells it to the railway, which transforms the single-phase, 25-cycle power to 132,000 volts for distribution over railway-owned and operated lines.

The other considerable a.c. electrification in the United States is the New York-New Haven section of the New York, New Haven & Hartford, using single-phase current at 12,000 volts, 25 cycles. Power for this scheme is provided by a special railway low-frequency generating station, supplemented by power purchased from companies in New York and New Haven, and by an emergency supply from a frequency-changer substation at East New York, capable of delivering 5,000 kW.

The question whether the arrangement of separate generation and transmission will be adopted for the new programme of electrification to be carried out in Germany on the so-called Arnold Plan (500 to 600 miles of line) is under consideration. The efficiency of conversion, three-phase standard frequency to single-phase low-frequency would be considerably improved by substituting mercury arc rectifiers for motor-generators, but the trials of many years at Basle with an experimental installation on these lines have shown that this system is not yet ready for use in a large-scale electrification scheme; nevertheless, it is intended to continue the trials.

Nearly all early d.c. electrifications generated their own power because 50-cycle rotary converters were not available for substation equipments, but no more special low-frequency power stations were built for railway electrification from 1924 onwards. The present position is that rectifiers, due to their high efficiency at all loads, suitability for any frequency and voltage, and low maintenance costs, have superseded rotary converters and motor-generators for any new d.c. electrification schemes and for reconstruction of existing substations. There is thus now no technical objection to taking supply for d.c. electrification from the national grid or from supply companies operating at the standard frequency.

Railway Load Promotes Development

If the railway load is large in comparison with the industrial and domestic supplies in the area through which the railway runs, the use of the generating and transmission system provided mainly for the railway electrification acts as an important stimulus to the development of the general supply, and is thus of great benefit to the community in the area. The combination of the railway load and the general supply has also the effect of reducing the cost of power to the railway.

If the railway load and the general supply are both substantial, a single system of generation and transmission will require a smaller proportion of stand-by plant and capacity than two separate systems. This should result in lower costs in respect of capital charges for both the railway load and the industrial and domestic supplies. There may also be some diversity between the two classes of supply, resulting in an improved load factor.

If the railway load is small in comparison with the industrial and domestic supplies, the railway will benefit by being able to purchase power at a cheaper rate than would be practicable if it depended on its own generating and transmission system.

The paper quoted the acquisition by the Natal Central Undertaking in 1927 of the supply system established by the South African Railways for their Pietermaritzburg-Glencoe section. This system was designed from the outset to generate and transmit power at 50 cycles with the special intention of its eventual use for giving supplies to municipalities, industrial, mining and domestic consumers throughout the area traversed by the electrified railway lines. Figures were quoted in the paper to show how the general supply in this area had grown continuously from very small dimensions, at the time when electrical operation of the railway began, to the present-day consumption, which, although still small compared with the railway load, is such as to have a material effect on the industrial and domestic development of the area. The figures also showed the beneficial effect of the combination of supplies and the growth of total demand on the prices at which power is sold to consumers of different classes, including the railway administration.

The ownership of the power supply system, the power station, transmission lines, and possibly the traction substations, is a separate issue. The decision will depend on several considerations, including the relative magnitude of the traction load and the supplies to other consumers, priority of supply to the railway in the event of a partial breakdown, control of track feed from the substations in relation to railway operation, and the fact that a supply company or a provincial board is better adapted to the negotiation of contracts for bulk supplies and supplies to industrial and domestic consumers than a railway authority.

Economies from Combination

One example of these alternative policies is the railway power station at Stonebridge Park. This was put in commission in 1916 for supplying the

(*Continued on page* 439)

Report on Electrification of Railways

Considerations influencing the choice of 1,500V. d.c. for future electrification schemes in Great Britain

IN arriving at its general recommendation of the 1,500V. d.c. overhead line system for future electrification in Great Britain, the Committee on Electrification of Railways appointed by the Railway and London Transport Executives made a detailed scrutiny of alternative methods, both established and experimental. Full weight was given to the trend towards 3,000V. d.c. elsewhere, but there are circumstances peculiar to this country which tipped the scale in favour of the lower voltage, as shown in the summaries of the report in our March 23 and April 6 issues. As then recorded, comparative estimates were prepared of typical schemes on alternative electrical systems. Among them was an estimate for 115 route-miles of main-line with a traffic density of 7.8 million trailing ton-miles per annum per mile of single-track running line, which was selected as typical of the four-track main lines in this country.

As it is stated in the report that future conversions to electric traction in this country are likely, in general, to be confined for many years to lines with high traffic density, the estimates for the various systems on a route of this type are reproduced in Table 1. It is emphasised in the report that the capital charges and operating costs shown cover only those items which are affected by the choice of system, and do not represent the total costs of electrification. The percentage differences in favour of one or the other of the four systems are, therefore, marginally less than would appear from the table.

TABLE 1 ELECTRIFICATION COSTS OF FOUR SYSTEMS FOR FOUR-TRACK MAIN LINE

	D.c. 750 v.	D.c. 1,500 v.	D.c. 3,000 v.	A.c.* 20,000 v.
	£ (000)	£ (000)	£ (000)	£ (000)
Capital expenditure				
Rolling stock	6,065	4,373	4,792	5,462
Electrical equipment of track	2,562	3,053	2,740	2,554
Alterations to way and works	151	1,837	1,837	2,268
Substations	2,372	1,008	760	1,477
Transmission	463	463	463	138
Total	11,613	10,734	10,592	11,899
Per cent.	108	100	98·5	111
	£ (000)	£ (000)	£(000)	£ (000)
Annual expenses (including capital charges)				
Rolling stock	509	426	453	522
Electrical equipment of track	153	184	170	161
Alterations to way and works	5	60	60	74
Substations and transmission	156	84	71	106
Cost of electricity	478	434	430	488
Total	1,301	1,188	1,184	1,351
Per cent.	109	100	99·8	114

* Single-phase, low frequency

Design of Dual-Voltage Stock

An important factor in favour of 1,500V. d.c. for Great Britain was the need for a certain amount of inter-running with lines electrified on the lower-voltage third rail system. It is stated that no difficulty arises in designing multiple-unit trains for dual-voltage operation on 750V. third-rail and 1,500V. overhead line systems. Although existing third-rail systems operate at voltages ranging between 630 and 660 d.c., all equipment recently renewed for these installations is capable of operating at 740V.

Four motors are necessary on each motor coach to provide for the usual series-parallel control on both 750 and 1,500V on two motor coaches, with or without the interposition of a trailer, can be coupled together electrically, each coach being equipped with two motors. This power equipment may be connected in two ways: —

(*a*) the complete equipment may consist of two 750-volt sets, each with its own complement of group switches, contactors and resistances, the two sets being connected in parallel for 750-volt or in series for 1,500-volt operation.

Alternatively (*b*): the motors may be grouped in pairs, those of each pair being connected in series or in parallel according to the line voltage, with corresponding groupings of the component parts of the single set of resistances.

Motor-generators for 1,500/750 volts must be provided for the operation of the 750-volt auxiliary equipment when the train is running on the 1,500-volt overhead line system. The heater circuits in each coach must be sub-divided for series connection of 1,500V. and parallel connection on 750V. by means of remote-controlled or automatic change-over switches.

The only problem that may arise is that of accommodation of the enlarged equipment on the motor coach. It may be necessary to house some of the gear in the coach, if the available space under the coach betwen the bogies is insufficient.

Third-Rail Locomotives

Locomotives required to run on a third-rail system must be of special design in order that power may be maintained when passing over gaps in the conductor rail. It is stated that in a design similar to that of the Southern Region motor-generator machines, it is quite practicable to connect the two M.G. sets in series or in parallel according to the voltage in use. While the flywheel principle is accepted as an important advance in the design of locomotives for conductor rail systems, the report suggests elsewhere that sections of overhead line at the same voltage might be necessary to prevent stalling at lengthy gaps when hauling heavy mineral trains on steep gradients.

Traffic Trends

Both in passenger and freight traffic the committee foresees a trend towards lighter and faster trains, with improved frequency of passenger services and an increased number of booked freight trains formed, perhaps, of 35 instead of 50 wagons of fitted stock. These two tendencies in turn will make it necessary to speed up slow-moving and heavily-loaded coal trains, which may entail a limit on loads in the region of 850 tons, although trains from 1,000 to 1,100 tons could still be operated on multi-track routes. It is considered that for all these purposes no electric locomotive with a capacity of more than 3,500 h.p. is likely to be required.

Experience has shown already the stimulation of traffic resulting from faster, more frequent and more regular passenger services. Table 2 compares the number of passenger journeys in the last year before electrification with travel statistics for 1947, on routes where the former Southern Railway extended electrification beyond suburban limits.

TABLE 2 TRAFFIC INCREASES ON S.R. AFTER ELECTRIFICATION

Routes	Electrified	Passenger journeys in last year before electrification	Passenger journeys in 1947
Reading—Camberley	Jan., 1939	1,500,000	4,750,000
Gillingham—Maidstone	July, 1939	4,750,000	8,750,000
Portsmouth *via* Guildford	July, 1937	3,000,000	7,250,000
Portsmouth *via* Horsham, etc.	July, 1938	3,750,000	8,500,000

It is thought that the trends in passenger and freight services will increase the scope for locomotives of the mixed traffic type, which would handle the bulk of the traffic. This development would be conducive to better utilisation of motive power and, therefore, to economy in capital expenditure. In this connection it is interesting that attention is drawn elsewhere in the report to the fact that d.c. motors can now be designed with a wider range of speed and power variation by field control.

Dealing specifically with freight services, it is pointed out that electrification can increase the average speed of trains without increasing their maximum speed. Improved braking characteristics are of assistance in this respect, and it is thought desirable, in view of the small amount and cost of the equipment required, to consider the provision of rheostatic braking on electric locomotives intended for working the heavier mineral trains in certain regions. Generally in this country the nature and length of gradients are not considered to justify the more expensive equipment necessary to provide for regenerative braking which returns energy to the line.

With regard to shunting, it is recommended that the complementary use of diesel power should be studied in preparing any electrification scheme. Reference is made to the design of an electric locomotive for British Railways with an auxiliary diesel-driven generator to provide power for shunting on non-electrified lines. Such locomotives would enable the equipment of sidings to be reduced to a minimum.

The report shows that there are 9,800 route-miles of railway in all countries (excluding urban systems) electrified with single-phase low-frequency a.c., compared with 10,200 route-miles using d.c. at 1,200, 1,500 or 3,000 volts. Traffic conditions in Great Britain are such that the low-frequency, single-phase system does not show a financial advantage even on lines of low traffic density, in spite of the possibility of reducing the cost of overhead equipment when using a voltage of the order of 15,000. So far trials of rectifier equipment for converting industrial frequency power to a low frequency for traction remain in the experimental stage, and it is necessary to employ substations with frequency-changing motor-generators. It is pointed out, also, that single-phase motors are not well-suited to the operation of multiple-unit trains in suburban service, as frequent starting is liable to cause rapid wear of commutators and brushes. Further, it is necessary to house the main transformer in the body of the motor coach, reducing seating space, unless the equipments are of small capacity.

Certain railways convert a single-phase supply to d.c. or three-phase a.c. in the locomotives, but the single-track mileage on which such systems are employed amounts to less than 5 per cent. of the total mileage electrified with single-phase a.c. The convertor locomotives in the United States have been designed for working mineral trains of 4,000 to 6,000 tons on steep gradients, and traffic conditions in Great Britain are such that the convertor or motor-generator locomotive with d.c. traction motors would have no advantage over a machine with normal a.c. commutator motors. The committee also investigated the Kando system of converting single-phase to three-phase a.c. for the traction motors, but is unable to recommend it because of the complication of the convertor set in the locomotives and the fact that probably much traffic on future electrifications in Great Britain will be worked by multiple-unit trains.

Future Developments

It is considered that the possibility of using 50-cycle a.c. for traction is a development that may prove of considerable importance, and the various systems now being tested are reviewed. The committee's recommendations state that the system might conceivably have advantages for the conversion of secondary lines provided it were not prejudicial to operation on adjacent lines equipped on the standard system. It is therefore suggested that, when economic conditions permit, the Railway Executive should consider an experimental installation on the 50-cycle system on a suitable line. On similar terms the possibility of using 3,000 V. d.c. for secondary lines with light traffic is not ruled out in the recommendations.

The use of higher d.c. voltages than 3,000 is technically practicable, and suggestions are made for suitable motor combinations and control systems for up to 6,000 V. There would be difficulties and disadvantages in their use, however, and the committee has not thought it necessary to take account of d.c. voltages higher than 3,000.

Traction Loads on Industrial Power Networks

(*Concluded from page* 437)

Euston-Watford line, and was equipped with 25-cycle generating plant. It was reconstructed in 1941-1944 with 50-cycle plant. The ownership of the station remained with the railway, but in 1947 the station was interconnected with the National Grid for exchange of power by means of two 10,000-kVA. transformers.

An agreement is now under negotiation for the two former Southern Railway power stations at Durnsford Road and Deptford East to be reconstructed by the British Electricity Authority for generation at 50 cycles to supply all the power required by the railway for the suburban area and a large amount of power for the Grid.

A study of various alternative arrangements for Durnsford Road was made by Messrs. Merz & McLellan in 1947 and embodied in a report for the Southern Railway Company. The comparative costs were calculated on the basis of the following railway requirements:—maximum half-hour demands, 45,000 kW in the winter, 41,000 kW in the summer; maximum 3-minute demands, 50,000 kW in the winter, 45,000 kW in the summer; annual consumption 150 million units. It was assumed that the turbo-alternators would be overhauled only during the summer months when the demand was reduced. The cost of power to the railway in the different circumstances clearly showed the advantage of combining railway and general supplies, as tabulated below:—

Scheme	Cost per unit to the railway for a supply of 150 million units per annum, assuming interest charges of 2½ per cent.	4 per cent.
1. Supply from Grid. No reconstruction, railway bearing cost of connection	0·822d.	0·826d.
2. Existing station reconstructed with five 15,000 kW sets. No Grid connection	0·867d.	0·922d.
3. Existing station reconstructed with four 15,000 kW sets and connected to Grid for stand-by supply	0·834d.	0·881d.
4. Existing station reconstructed with four 30,000 kW sets, to give a total supply to the railway and the Grid of 400 million units per annum, with an average monthly maximum demand of 100,000 kW	0·673d.	0·709d.
5. A new station constructed on adjacent site, equipped with six 30,000 kW sets to give a total supply to the railway and the Grid of 600 million units per annum, with an average monthly maximum demand of 150,000 kW ...	0·673d.	0·711d.

Scheme 4 above is the one which has been adopted for Durnsford Road. Figures were also quoted in the paper of estimated costs of production at Deptford East, showing a cost per unit of 0·62d. with 50-cycle plant compared with 0·87d. if generation continued at 25 cycles.

TALTAL RAILWAY COMPANY REPORT.—The report of the Taltal Railway Co. Ltd. for the year ended June 30, 1950, shows that working receipts were £104,675, against £111,609 for the previous year. Expenses were £107,056, against £140,987, resulting in a loss of £8,122, compared with £35,370. After deduction of income from investments, and adjustments for income tax and other charges, the net loss was £885, which, with the debit balance from last year, made a debit balance to be carried forward of £95,968. A tariff increase of 40 per cent. granted by the Chilean authorities and a rise in traffic, accounted for the improvement in gross receipts of some $6,274,000. Unfortunately, a government decree made retroactive to January 1, 1949, placed a new burden on the company; otherwise the 1949-50 results would have shown a small profit, instead of a loss of £885. The company has presented another petition for an increase in traffics to meet rises in costs. During the year, Oficinas Alemania, Chile, and Flor de Chile have been in continuous operation, but Oficina Esperanza has not yet reopened.

XUM

Mechanical Requirements of Pantograph Design

Combining rigidity with light weight and rapid adaptation to small changes in height of contact wire

Pantograph type T.C.1. first used on G.E.C. stock for the Estoril Railway, Portugal

THE problems of pantograph design are mechanical rather than electrical. A satisfactory pantograph must maintain as nearly as possible a steady pressure on the overhead wire between certain limits of height, and at the same time withstand the horizontal forces impressed on the framework by wind pressure, the rocking of the train, and the friction between pan and contact wire. Clearly the structure as a whole must have a certain rigidity, but this must not be obtained at the expense of excessive weight.

The inertia of the system must be kept low, as the maintenance of contact between pan and contact wire requires the pan rapidly to follow changes in contact height due to the sag of the wire, passage through tunnels and under bridges and so on. In addition to such changes, which are usually of large dimensions and low frequency, there are shorter movements of higher frequency due to rail irregularities, carriage springing and so on. Though it is not difficult to give the pantograph framework sufficient acceleration to follow large changes in height, it is impracticable to make the main linkages follow small, quick, vertical movements, and the pan is usually sprung to the apex of the pantograph, the springing then taking care of small vertical changes.

An example of these features in pantograph design is seen in the G.E.C. lightweight equipment illustrated. The frame is of light-weight tubular construction and carries a single pan sprung to the apex of the pantograph in such a way that it always moves up and down with its plane parallel to the mounting plane of the pantograph. Light torque bars across the pantograph apex prevent the tilting of the pan, which is possible if each end is independently sprung and which results in reduced clearance.

Rigidity of the framework and minimum friction is ensured by the use of ball-bearing joints; the bearings are shunted by means of copper flexibles. The pantograph is raised by air pressure, but when once lifted is maintained in position by the two springs seen in the illustration. When the air is released from the air cylinder, the collapse of the framework under the influence of the down springs is regulated by a damping choke in the cylinder exhaust.

The pantograph illustrated is now successfully in service on the locomotive and motor coaches recently supplied by the General Electric Company to the Estoril Railway, Portugal. The design is being used for the motor coach equipments under construction for the Manchester-Sheffield-Wath electrification.

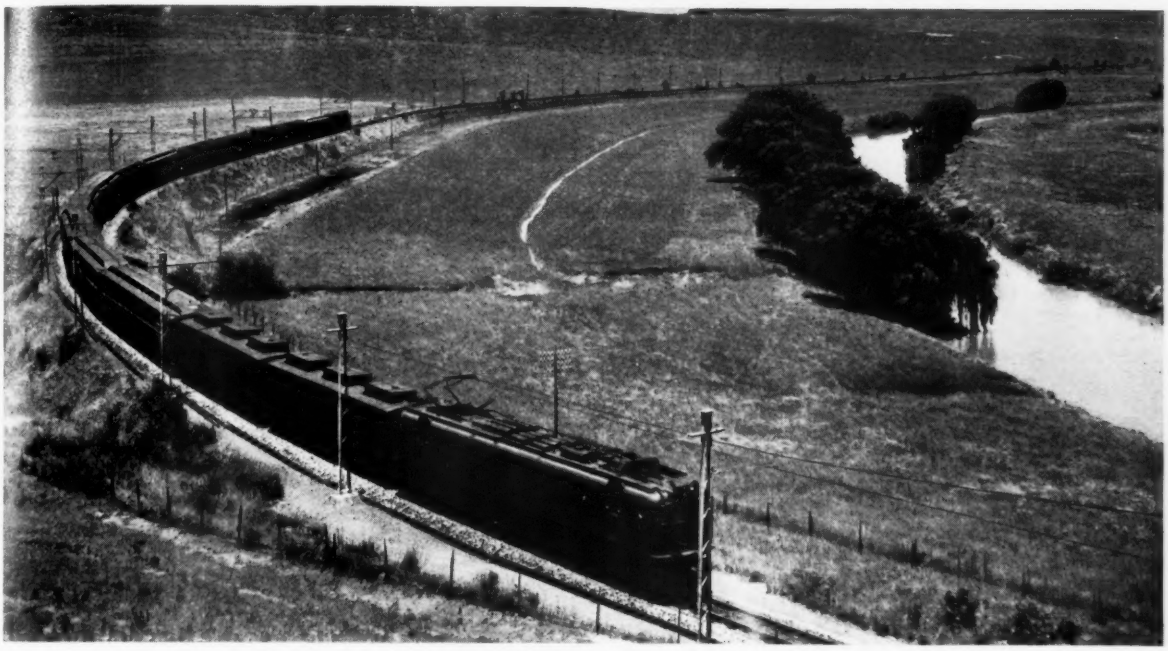
BRITISH RAILWAYS FIRE-FIGHTING CONTEST.—Eliminating contests are now taking place in all Regions of British Railways to decide which teams will take part in the first Inter-Regional Fire-Fighting Competition to be held in London on May 30. The number of teams entered is 265, and they will be drawn from all grades of staff at stations, depots, workshops, and offices. Two will represent each Region in the finals. The competition is divided into two parts, one for hydrant drill and the other for trailer pump drill, and a challenge shield will be presented to the winners in each event. The competitions are being staged in conjunction with local authority fire services, and London Fire Brigade officials will act as judges in the finals.

F. H. LLOYD & CO. LTD. FILM.—On April 12 a 30-minute industrial sound film, "Great Names," was given a private showing in London. The film has been made by the Big Six Film Unit for F. H. Lloyd & Co. Ltd., and depicts the production of steel castings and the use of Lloyd steel castings in the manufacture of capital equipment at the works of Aveling-Barford Limited, Associated Portland Cement Manufacturers Limited, British Railways (Doncaster Locomotive Works), Distington Engineering Co. Ltd., Huntington, Heberlein & Co. Ltd., North British Locomotive Co. Ltd., Ransomes & Rapier Limited, Ruston-Bucyrus Limited, Vulcan Foundry Limited, Woodall-Duckham Vertical Retort & Oven Construction Co. (1920) Ltd., and Wellman Smith Owen Corporation Limited. Sound tracks are being made of the commentary in French, Spanish, Portuguese, and Turkish to enable copies to be made in these languages. The film with the Turkish commentary will be shown at the Izmir International Fair from August 20 to September 20 next and a wide distribution overseas has been arranged.

R.C.T.S. EAST LONDON RAIL TOUR.—Nearly 500 railway enthusiasts took part in a tour of East London by special train on April 14, which was organised by the Railway Correspondence & Travel Society in conjunction with the Eastern Region of British Railways. The 25-mile tour started at Fenchurch Street at 2.30 p.m. and ended at Stratford at 4.38 p.m. The itinerary included the Blackwall line as far as Millwall Junction, the former Eastern Counties Railway branch to North Woolwich, and a return from Stepney East to Stratford *via* East Ham and Forest Gate Junction. Many of the lines and junctions covered had not been used by through passenger trains for several years.

LONDON TRANSPORT: "ROVER" TICKETS FOR JUVENILE PARTY TRAFFIC.—An additional cheap ticket facility, designed to help children to see the sights of London during the Festival of Britain, has been introduced for parties of children travelling by London Transport railways. Known as the "Rover" ticket, it allows parties of 20 or more children, with accompanying adults, to travel anywhere in the defined area on the day of issue. The ticket costs 1s. for each child under 16 and 2s. for children over 16, and for adults travelling with the party. The sections of line over which the ticket is available are between Aldgate East and Hammersmith (both stations) on the District and Metropolitan Lines; on the Inner Circle; between Elephant & Castle and Queens Park on the Bakerloo; between Finsbury Park and Hammersmith on the Piccadilly; between Camden Town and Clapham South on the Northern; and between Liverpool Street and White City on the Central Lines. The party ticket is obtainable in advance at London Transport headquarters at 55, Broadway, London, S.W.1.

Electric Traction in South Africa



Electrically-hauled mail train in Natal

Multiple-unit suburban train on the Reef

XUM

The Trans-Arabian Railway

American interests are constructing a standard-gauge line from the Persian Gulf into the interior of Saudi Arabia

(From a Correspondent)

BEFORE the end of the war there were few visitors to the Kingdom of Saudi Arabia, except Mohammedan pilgrims to Mecca, mainly for whom the 3 ft. 5¼ in. Hedjaz Railway from Damascus to Mecca was constructed by the Turks between 1901 and 1908, when Arabia formed part of the Turkish Empire. The activities of Lawrence and his guerillas wrecked the line in 1917, and no trains have since traversed its southernmost section. In 1933, King Ibn Saud guardedly granted oil concessions to an American enterprise, which made a slow beginning but blossomed rapidly as the war in Europe ended and the demand for oil in the East intensified.

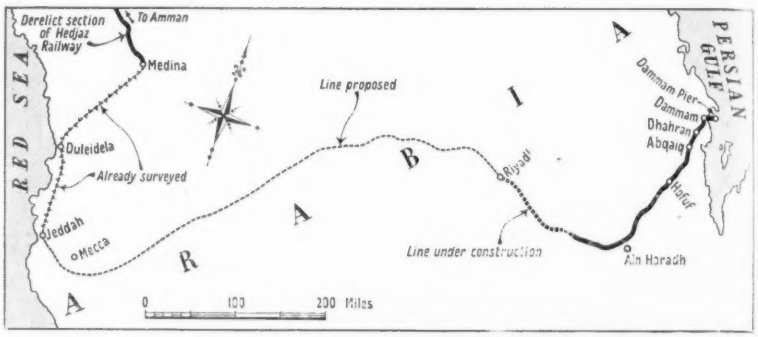
Four great American oil companies formed a powerful concern to operate the concession and market the produce. This was the Arabian American Oil Company (better known as Aramco), which rapidly developed and expanded the 440,000 sq. mile concession. With a base at Dhahran, near the Persian Gulf, plant and refineries at Dammam, Abqaiq, and Ras Tanura, Aramco brought in thousands of Americans, Indians, Italians, and others to work at these centres, and attracted a raw labour force of more than 10,000 Saudi Arabs.

Thus, by 1948 there existed in Saudi Arabia hitherto-unknown examples of Occidentalism — populous industrial towns. The question of transport soon arose. Aircraft for the executives, and buses and desert lorries for the Arabs, were provided, but soon King Ibn Saud demanded a railway. He pointed out that buses encourage smuggling, and that a rigid control of their movements was difficult. He also admitted his love for trains, and desired to see his cherished dream of a Trans-Arabian Railway from the Persian Gulf, through his capital at Riyadh, to Medina and Jeddah fulfilled.

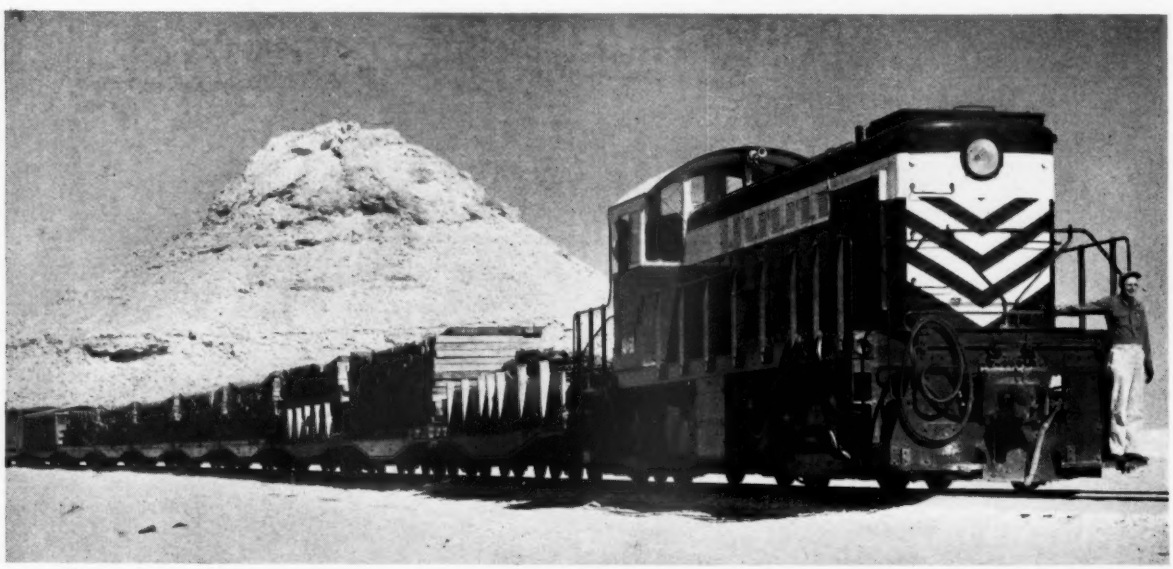
With its entire investment and future activity held, as it were, in the hollow of the monarch's hand, Aramco makes a point of strictly complying with the wishes of the Saudi Arab Government. It undertakes many operations widely removed from those normally associated with oil companies, such as agricultural development in the oases, air-conditioning the King's palaces, and the erection of telephone lines across the country. It agreed to finance and construct a standard-gauge railway, but the arrangements call for the recovery of costs from the Saudi Arab Government at a later date. The project was to come under national ownership from the outset.

Progress of Construction

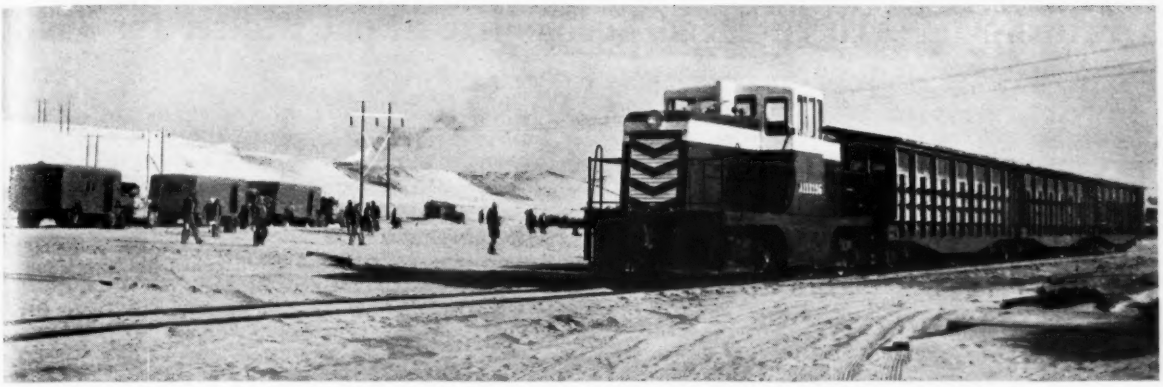
Much construction work has been sub-let to sponsored contractors, who will also undertake maintenance. The work was speedily begun, and results were soon achieved. The line began at Dammam, a Persian Gulf port being enlarged by Aramco. The first rails were laid in November, 1948, from the shore end of a mile-long pier under construction in the port. By the beginning of January, 1949, the line had reached Dhahran, 10 miles inland, and six weeks later passed through Abqaiq, site of many wells and a stabiliser plant. On February 23, the first freight train ran from Dammam over the 41 miles of new standard-gauge line to Abqaiq, and



Completed and projected sections of line from the Persian Gulf to the Red Sea



Diesel locomotive hauling train of sleepers to railhead



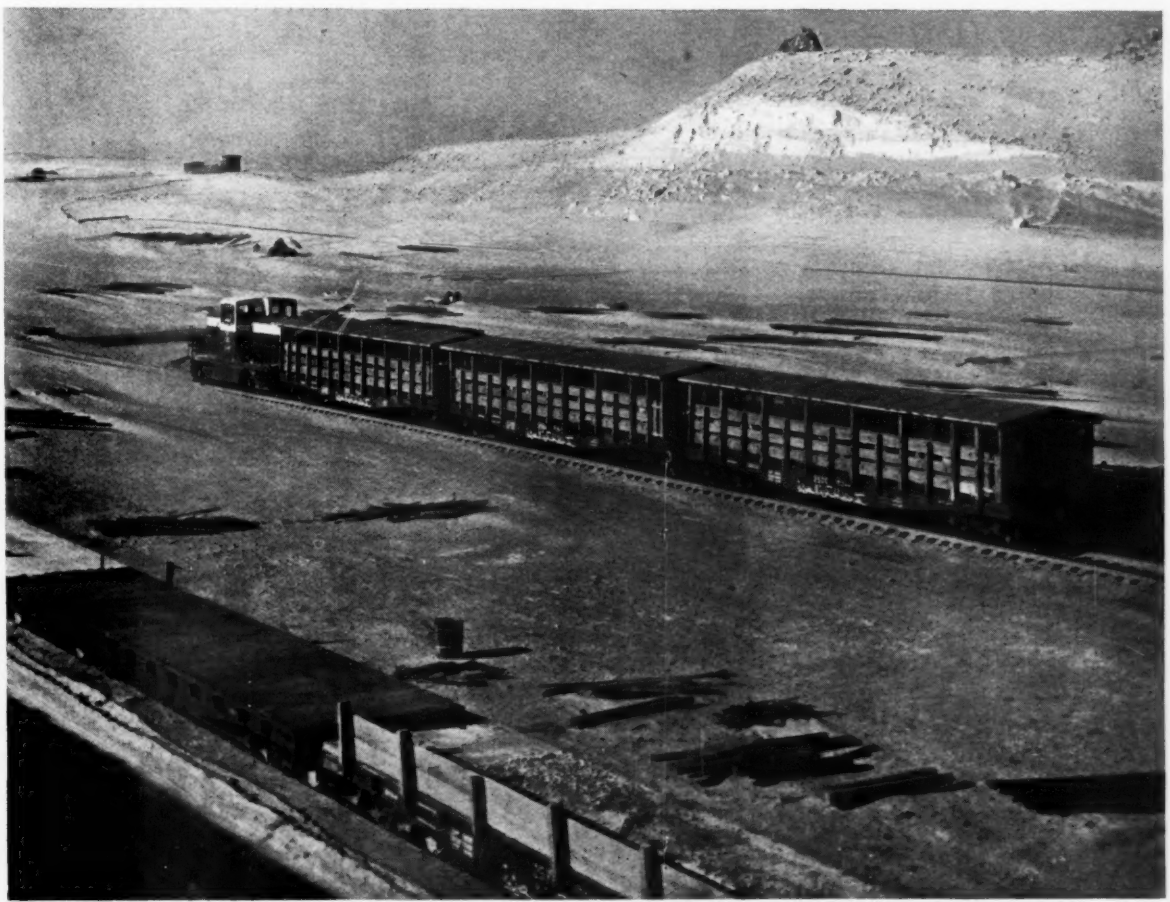
Passenger train conveying Arab workmen from Dhahran to Dammam

on March 9 a frequent service of suburban passenger traffic began between Dammam and Dhahran.

In late October, 1949, the railway reached Hofuf, the largest oasis in Saudi Arabia, 85 miles from Dammam. Hofuf oasis is formed by the combination of 63 villages, all adequately supplied with water from surface springs flowing throughout the year. It has always been an important centre for camel caravans trading across the desert, as there are over 25,000 irrigated acres of producing soil. Vegetables of all kinds grow profusely, and dates have been exported for centuries. Aided by the Aramco agricultural project, the local farmers have increased their crop output by more than 300 per cent., and freight trains are already moving profitable loads to the coast.

By the beginning of 1950 the railway was open to a point five miles beyond Hofuf Station. The long trestle pier at Dammam had been completed, and double track laid on busy sections near Dammam and Dhahran. A total of 108 track miles was open to traffic by the end of January. The writer has seen railway wagons on the pier at Dammam being loaded with constructional equipment for the railhead, which at the time of writing is beyond Ain Haradh, slightly over halfway to Riyadh. The line has taken a southerly

(*Continued on page* 449)

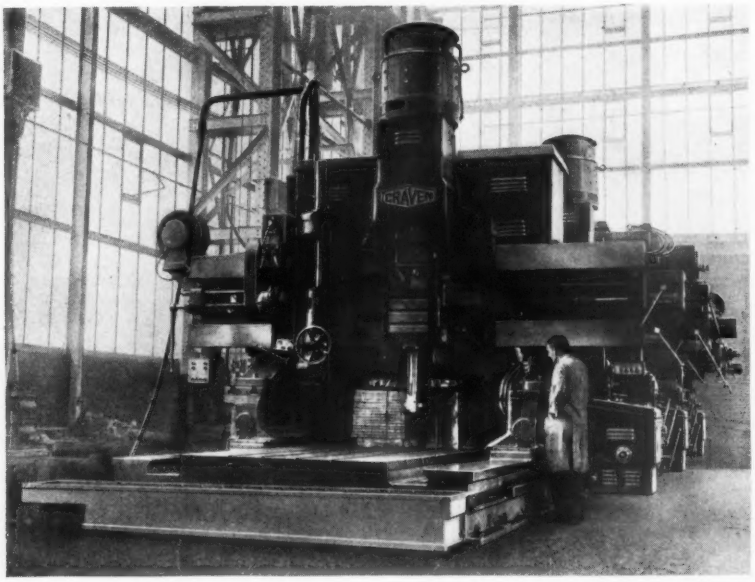


Trains of flat wagons, and flat wagons fitted with passenger bodies

Photos] [D. Dickey

British-Made Three-Head Locomotive Frame Slotter for India

Incorporating a milling head on each cross-slide with independent controls



The machine under test at the makers' works

IN our issue of November 11, 1949, we referred to the agreement between the Government of India and the Locomotive Manufacturers' Association of Great Britain for the provision of technical aid to the Chittaranjan Locomotive Works. These workshops, when completed, will have an annual output of 120 complete locomotives and 50 spare boilers. Machining capacity is being provided for the production of locomotives of either bar or plate-frame construction.

A combined locomotive frame slotting and milling machine for the Chittaranjan works has recently been completed by Craven Brothers (Manchester) Limited. In addition to the usual slotting heads provided with this type of machine an independent motor-driven milling head has been fitted to each of the three cross-slides. Such a provision is especially useful for the milling operations necessary on certain types of locomotive bar frames and avoids the transfer of a heavy and cumbersome component to another part of the machine shop.

Principal Design Features

The machine is capable of accommodating locomotive frames up to 50 ft. in length and 6 ft. wide and has a stroke of 24 in.; features of construction and control are in accordance with modern heavy machine tool practice. The bedplate is constructed in three sections, accurately machined and keyed together, and is 60 ft. long and 10 ft. 6 in. wide.

Two outer slideways are provided on which the three self-contained bridge type machines are mounted, and the work table is 6 ft. wide, being provided with tee-slots and holes for clamping the locomotive frames. Each of the machine units has a deep-section cross-slide which carries the slotting head and also the auxiliary milling head, both heads are mounted on independent saddles. Separate traversing leadscrews are provided. The cross-slides extend beyond the bedplate sufficiently to house either head when not in use and this enables both slotting and milling heads to be used over the full width of the work table.

The cross-slide is carried on two short uprights secured to two base saddles by tee-bolts fitting in circular tee-slots. This permits the whole cross-slide assembly to be centrally pivotted on a cross-beam, which ties the two saddles together, and enables it to be set either at right-angles to the bedplate or up to an angle of 10 deg. in either direction, thus facilitating the machining of angular faces.

Intermittent transverse feed of the slotting head is obtained from a 7½-h.p. constant-speed motor at the rear of the cross-slide. The revolutions of the motor at the end of the return stroke of the slotting ram is determined by a Craven planing machine feed control unit; the dial is graduated to give fine feeds ranging from $\frac{1}{64}$ in. to $\frac{8}{64}$ in. or coarse feeds from $\frac{1}{16}$ in. to $\frac{5}{16}$ in. according to the setting of a gear change in the feed drive.

The motor, allowed to run continuously and driving through a feed-change gearbox, provides six rates of continuous feed to the milling head ranging from ½ in. to 6 in. a min.; quick-power traverse is provided. A separate 10-h.p. constant-speed motor and a similar arrangement of feed drive are employed to give intermittent and continuous longitudinal feed and quick traverse to the whole of the machine unit along the bedplate slideways.

The two saddles are tied together by the heavy cross-beam and traversed longitudinally by two pairs of pinions, one pair engaging a rack at the front, and the other pair a rack at the rear of the bedplate. Arranged to eliminate backlash, the two pairs are coupled to drive in unison, and the rates of longitudinal feed are identical with those of the transverse feed. Provision is made for transverse hand adjustment of the slotting and milling heads on the cross-slide and for an extra-fine hand feed of the whole unit along the bedplate. Both hand and power swivelling adjustment are provided for angular setting of the cross-slide; power is obtained from the transverse feed motor and transmitted to a spur pinion in mesh with a fixed spur segment. After adjustment the cross-slide assembly is firmly clamped to the saddles.

The box-type slotting ram is mounted in square section slideways with taper strip adjustment and is actuated by a multiple-thread screw and a phosphor-bronze nut. The screw is direct-coupled to a 24-h.p. variable-speed motor controlled on the Ward-Leonard system. Slotting speeds range from 50 ft. to 85 ft. a min. and return speeds from 100 ft. to 125 ft. a min. The length of stroke and points of reversal are controlled by trip dogs mounted on the side of the ram which operate an oil-immersed reversing switch. The ram can be reversed by hand and safety switches are fitted in the event of overrun.

The ram has a built-in vertical spindle with a wide tee-slotted flange for the attachment of interchangeable tool bar extensions. The spindle can be rotated by hand for setting purposes, and tappet-operated ratchet mechanism enables intermittent rotary feed to be applied automatically at the end of each return stroke. The feed is reversible and the tool bar can be offset on the spindle flange to obtain the required slotting radius.

The self-contained milling head is mounted on its own saddle and fitted to the cross-slide in a manner similar to that of the slotting head. The vertical milling spindle revolves on roller and angular-contact bearings and is bored and recessed to suit standard milling cutters. Spindle speeds range from 12 r.p.m. to 98 r.p.m. and the drive is by an independent 10-h.p. constant-speed motor and an eight-speed gearbox. The spindle slide is carried in vee-type slideways in which it has 21 in. vertical adjustment for cutter setting or hand feed;

the lower face of the slide has circular tee-slots for fitting outer milling arbor supports or for a horizontal milling spindle attachment.

Electrical Drives and Control

Swinging cables and bell-mouthed adaptors are used to convey electrical supply to a main control panel mounted on the cross-beam of each machine unit, and also to carry the leads from the panel to the slotting head. An induction motor, controlled by an oil-immersed auto-starter switch, drives a variable-voltage generator supplying current to the slotting motor. A smaller constant-voltage exciter—also coupled to the induction motor—provides field current both for the generator and for the slotting motor as well as current for the two compound-wound feed motors.

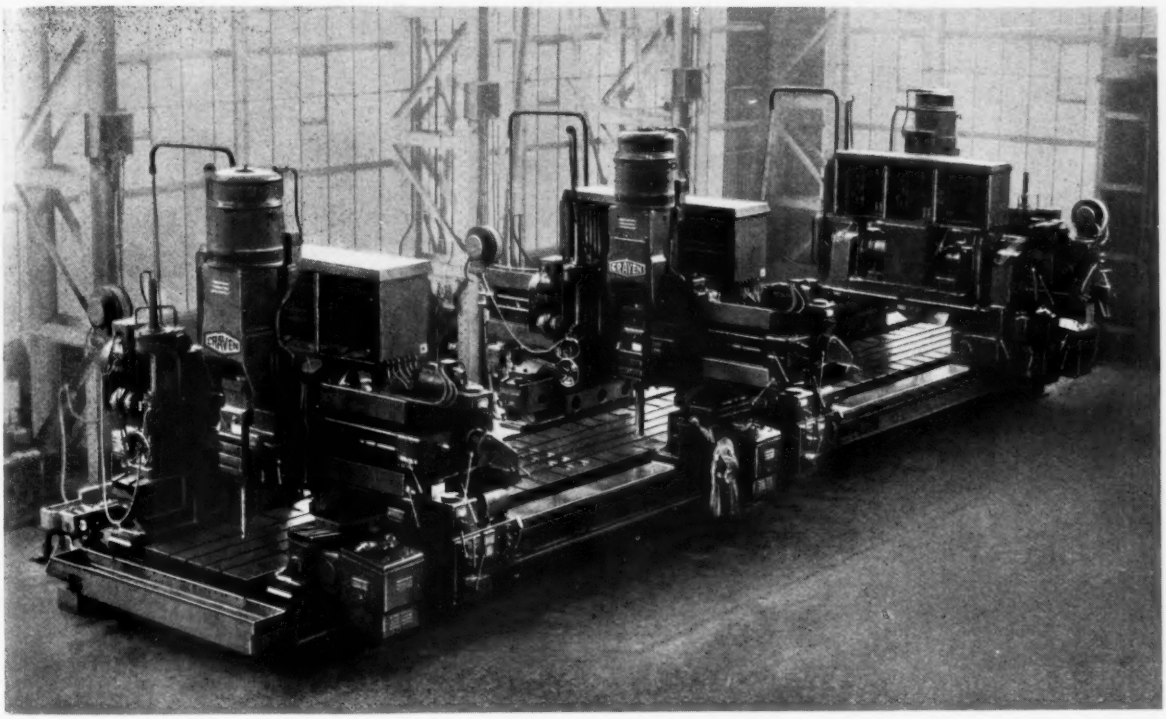
The cutting and return speeds are the same for strokes up to 15 in. length, being varied by regulation of a rheostat in the generator field circuit, but regulation of an additional rheostat, in the slotting motor field, is also used to obtain the higher return speeds suitable for longer cutting strokes. A magnetic brake, acting automatically on the slotting motor coupling, prevents the ram descending by its own weight when the drive stops; push-button release is available for ram setting.

Ram reversal is controlled by adjustable dogs on the ram actuating an oil-immersed reversing switch in the generator field. A further adjustable dog on the ram strikes the feed start switch at the end of the return stroke, thus starting the appropriate feed traverse motor, and engaging a solenoid clutch to drive a feed control cam. The amount of slotting feed is selected by the setting of a graduated dial which determines the distance travelled by the cam before it opens a separate feed stop switch. This latter action immediately terminates the feed traverse, but maintains the stop switch in the open position until the feed start switch is released as the ram commences its cutting stroke, at which point the cam is returned to its original position under spring control.

The contactors for the Ward-Leonard equipment are in the main control panel above the cross-beam with those for the two feed motors and for the milling spindle motor. Leads are conveyed to the milling saddle from a spring-loaded cable drum and a reversing switch on the panel governs the direction of the spindle rotation. A saddle control station provides "start" and "stop" push-buttons for the milling spindle and for the continuous milling feed, these being duplicated at the nearest end of the cross-slide together with "forward" and "reverse" quick-power traverse buttons for both longitudinal and transverse motions.

The four quick-power traverse buttons are duplicated at the opposite end of the cross-slide; a further set is housed in a portable switch box. A subsidiary desk-type control panel, mounted on the front of each machine unit contains the two slotting speed rheostats and an ammeter, push-button switches for releasing the magnetic brake, a selection switch for "long" or "short" stroke slotting, duplicate "start" and "stop" buttons for the slotting motor, master switches for the slotting head, and a main feed selector switch.

Selection of longitudinal slotting feed renders traverse feed inoperative, and *vice versa*, and automatically cuts out the milling spindle motor and milling feed. Similarly the selection of longitudinal or transverse milling feeds renders the slotting motor and slotting feed push-buttons inoperative. The milling feed cannot be started unless the milling spindle motor is running, but quick power traverse remains operative for all positions of the selector switch. Overrun limit switches are fitted to all traverses.



The Craven three-head combined locomotive frame slotting and milling machine

G.E.C. AT THE CANADIAN INTERNATIONAL FAIR.—The General Electric Co. Ltd. will be represented at the Canadian International Fair, Toronto, this year by its new subsidiary, the British General Electric Co. (Canadian) Ltd. The exhibits have been chosen from a wide range of products, and the stand will exhibit six dioramas showing some of the main activities of G.E.C.

WOOD PRESERVING ASSOCIATION CONVENTION.—The British Wood Preserving Association is holding a Convention at Cambridge on June 25-27, with headquarters at Gonville and Caius College. Papers on various aspects of wood preservation are being contributed by authorities overseas and in this country. Full particulars may be obtained from the British Wood Preserving Association, 21, College Hill, London, E.C.4.

XUM

Improvements at Takoradi, Gold Coast

Excavation of hill to provide space for marshalling yard

Main wharf, showing reclamation on left. Takoradi-Kumasi line in foreground

RAILWAY NEWS SECTION

PERSONAL

Mr. W. G. W. Reid, General Manager, Madras & Southern Mahratta Railway, has been granted leave preparatory to retirement in October.

Mr. R. P. Humphrys, Deputy Chief Solicitor, British Transport Commission, who, as recorded in our April 13 issue, is retiring on May 12, was born on May 3, 1890, at Horsmonden, Kent, and was educated at University School, Hastings, and at Clare College, Cambridge, where he graduated in 1912. He was then articled to Mr. J. W. Alsop, of Alsop, Stevens, Crooks & Company, Solicitors, of Liverpool. In September, 1914, he was commissioned in the 7th Battalion, Kings (Liverpool) Regiment, and served in France until invalided home in April, 1916, with trench fever. He rejoined his battalion in December, 1916, in the Ypres Salient, and commanded a company in the third battle of Ypres, July, 1917, and until wounded at Festubert in April, 1918. He was mentioned in dispatches. He was demobilised, with the substantive rank of Captain, in October, 1919; was admitted a solicitor in July, 1920; and returned to Alsop, Stevens, Crooks & Company as Managing Clerk. In March, 1921, Mr. Humphrys joined the staff of the Solicitor to the L.N.W.R. as Junior Common Law Solicitor. In 1928 he became head of the department dealing with county court, workmen's compensation and police court matters; and in 1932 was appointed Divisional Solicitor, Manchester, L.M.S.R. In 1934, he returned, at his own request, to Euston, as Solicitor Assistant, Common Law. In 1939 he was appointed Assistant Solicitor to the company, and in 1945 became Chief Solicitor, which position he retained in the London Midland Region of British Railways until his appointment as Deputy Chief Solicitor, British Transport Commission, at the beginning of last year. Mr. Humphrys was recently appointed a County Magistrate for Hertfordshire.

Mr. R. P. Humphrys

Deputy Chief Solicitor, British Transport Commission, who is retiring on May 12

Mr. G. H. Bailie, Vice-President, Eastern Region, Canadian Pacific Railway, has been elected Vice-President and Director of the Dominion Atlantic Railway.

Sir Archibald Forbes, Deputy-President of the Federation of British Industries, has been elected President of the Federation, in succession to Sir Robert Sinclair, who has retired.

Mr. R. C. Johnston, formerly Assistant Vice - President, Personnel, Canadian National Railways, who, as recorded in our March 30 issue, has been appointed Assistant Vice-President of Operations, with particular duties relating to organisation and special matters, was born in Beaverton, Ontario, in December, 1888. He joined a constituent of the C.N.R. in 1906 and was transferred to Montreal in 1919 as Division Agent in the Office of the General Superintendent. After holding various posts Mr. Johnston was appointed to be Assistant Vice-President, Personnel, in September, 1948.

Mr. R. C. Johnston

Appointed Assistant Vice-President, Operations, Canadian National Railways

British Railways Appointments

The Railway Executive announce that the following appointments have been made:—

Mr. J. L. Harrington, Chief Officer (Administration), Railway Executive Headquarters, to be Chief Officer (Marine & Administration), Railway Executive Headquarters.

Mr. A. Dean, Chief Officer Engineering (Works), Railway Executive Headquarters, to be Civil Engineer, North Eastern Region, York.

Captain J. D. Reed, Assistant Chief Officer (Marine) Railway Executive Headquarters, to be Executive Officer (Marine), Railway Executive Headquarters.

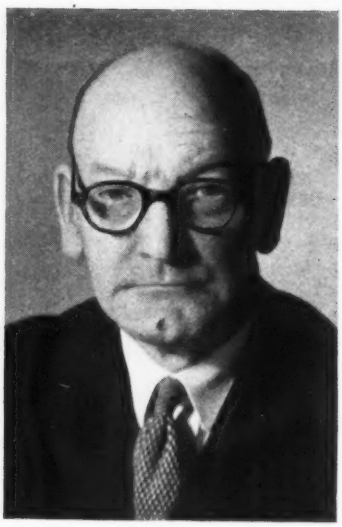
We regret to record the death on April 14, at the age of 77, of Lt.-Colonel Sir Charles Bressey, C.B., C.B.E., who was Principal Technical Officer, Ministry of Transport, from 1928 to 1935, and afterwards prepared for the Minister of Transport the Highway Development Survey of Greater London published in 1938.

Mr. H. Aidley, Assistant (Wages Staff), Regional Staff Office, London Midland Region, Euston, who, as recorded in our March 16 issue, has been appointed Executive Officer (Operating Staff), Railway Executive Headquarters, entered the service of the L.N.W.R. in 1913, and apart from a period of service in the Forces, spent the early part of his career in the Manchester district, where he gained experience in all branches of operating and commercial work. He joined the staff of the District Superintendent, Manchester, in 1921 and was transferred to the Chief General Superintendent's Department, Derby, in 1924, remaining there until 1933, when he was appointed Assistant Secretary of the Railways Staff Conference at Westminster. In 1937, he became Secretary of the Railways Staff Conference, dealing with all sections of the railway staff and acting for both the railway companies and the trade unions on certain joint bodies. He held this position throughout the war period and was awarded the M.B.E. in the 1947 New Year Honours List. Mr. Aidley joined the staff of the Chief Officer for Labour & Establishment, L.M.S.R., in 1947 as Assistant for Wages Staff.

Mr. H. Aidley

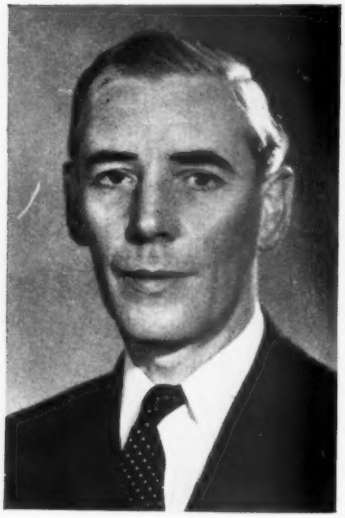
Appointed Executive Officer (Operating Staff), Railway Executive

Mr. E. McClelland, A.M.Inst.T., Assistant to the District Operating Superintendent, Newcastle, who, as recorded in our February 23 issue, has been appointed Assistant District Operating Superintendent, Sunderland, North Eastern Region, joined the N.E.R. in 1917, and after occupying posts at Washington, Sunderland, York and Newcastle, was appointed Assistant Controller in the Main Line Control at York in 1931. After a period as District Trains Inspector at York, he became Senior Freight Trains Clerk in the District Operating Superintendent's Office, York, and was appointed Head of the Operating & Commercial Joint Transit Section at



Mr. W. H. Johnson

Secretary Hotels Executive, who is retiring on April 30



Mr. T. H. Baker

Appointed Secretary of the Hotels Executive, as from May 1

Mr. W. G. Edmonds

Appointed Traffic Manager of the Manchester Ship Canal Company

York headquarters in 1940. He later became Deputy Chief Controller, District Control, York, and was appointed Senior Trains Clerk & Chief Controller in that office in 1942. Mr. McClelland had been Assistant to the District Operating Superintendent, Newcastle, since 1943.

Mr. W. H. Johnson, Secretary of the Hotels Executive, who, as recorded in our April 6 issue, is retiring on April 30, joined the service of the Great Central Railway in 1901, in the Office of the Secretary of that company at London Road Station, Manchester. He transferred to London with certain other headquarters staff in 1906, and subsequently passed through various sections of the Secretary's Department. For many years he was Personal Clerk to Sir Alexander Henderson (afterwards Lord Faringdon), Chairman of the Great Central Railway. In August, 1920, he was appointed Clerk to the Great Central Railway board and committees, and continued in a similar position on the formation of the London & North Eastern Railway Company in 1923. He was appointed Chief Board & Committee Clerk, L.N.E.R., in March, 1929, and continued in that capacity until he became Assistant Secretary of the company in February, 1937. In October, 1942, he was appointed Secretary, in which position he was also Secretary of the Forth Bridge Railway Company, the Manchester South Junction & Altrincham Railway and the Oldham, Ashton-under-Lyne & Guide Bridge Junction Railway Company, together with various directors' committees joint with the London Midland & Scottish Railway. In July, 1948, while still engaged on duties connected with the dissolution of the London & North Eastern Railway Company, he was appointed Acting Secretary of the Hotels Executive of the British Transport Commission, and became Secretary in January, 1950.

C. C. Wakefield & Co. Ltd. has announced the following appointments within its Industrial Sales Organisation:—Mr. J. W. MacMahon, to be Sales Manager, Industrial Oils Department; Messrs. B. S. Davis, D. S. Kirkpatrick and J. E. S. Elwell to be Eastern, Western and Northern Regional Sales Managers, respectively.

Mr. T. H. Baker, Assistant Secretary, Hotels Executive, who, as recorded in our April 6 issue, has been appointed Secretary of that Executive, as from May 1, entered the service of the London & North Western Railway at Dublin in 1917, was transferred to the General Manager's Office at Euston in 1922 and became Personal Clerk to the General Manager, L.M.S.R., in 1925. From 1927 to 1936 he was a member of the staff of the L.M.S.R. Executive Committee and in 1936 was appointed Personal Assistant to the Secretary of the company. During the latter years of the war, Mr. Baker was associated with the commercial activities of the L.M.S.R. and in 1941 became Outdoor Assistant at St. Pancras and Somers Town Goods Stations, London. After returning to Headquarters in 1943 as Head of the Merchandise Services Section of the Chief Commercial Manager's Department, he was appointed in 1946 to be Assistant District Goods Manager at Leeds, and in 1947 Assistant to the Chief Commercial Manager (Goods) at Euston. Mr. Baker was appointed Assistant Secretary of the Hotels Executive, British Transport Commission, in July, 1948.

Sir James Milne, formerly General Manager of the Great Western Railway, has been elected Chairman of the Ship Mortgage Finance Company.

Mr. J. W. Watkins has been appointed as a Director of the Birmingham & Midland Motor Omnibus Co. Ltd., in place of Mr. John Elliot, who has resigned.

The late Sir George Clark, Bt., D.L., who was Joint Deputy Chairman, Great Northern Railway (Ireland), left (estate in Great Britain and Northern Ireland) £296,068.

The following notification appeared recently in *The London Gazette* under the heading of Supplementary Reserve of Officers, Royal Engineers, Transportation Section: Lieutenant R. W. Johnson, to be Captain, October 1, 1950.

Dr. L. B. Pfeil, Director of the Mond Nickel Co. Ltd., and head of the company's Research & Development Department, has been elected a Fellow of the Royal Society.

Mr. W. G. Edmonds, Deputy Traffic Manager, Manchester Ship Canal Company, who, as recorded in our April 13 issue, has been appointed Traffic Manager, was educated at Merchant Taylors School, London, and served as a traffic apprentice on the L.N.E.R. He gained experience on the North East coast at Hull, Middlesbrough and West Hartlepool docks, and subsequently became Assistant to the District Superintendent, Hull, and Dock Superintendent, Hull. During the recent war he served with the Royal Engineers and was demobilised in 1945 with the rank of Lt.-Colonel, after commanding dock groups in this country and overseas. Mr. Edmonds joined the Manchester Ship Canal Company as Assistant Traffic Manager in 1947 and became Deputy Traffic Manager last year.

ARGENTINE MINISTRY OF TRANSPORT

Consequent on the recent changes at the Argentine Ministry of Transport referred to in our March 9 and 30 issues, the following further appointments have been made:—

D. F. Sarmiento Railway

Mr. Atilio Bandieri, to be Chief of Traffic Department.

General Urquiza Railway

Mr. J. C. Fiorito, to be General Manager.

Mr. E. J. Cotoruelo, to be Chief of Traffic Department.

Mr. Nelay Katzenelson, to be Chief of Way & Works Department.

General Belgrano Railway

Mr. Adolfo Kirkerup, to be Chief of Traffic Department.

Mr. Ricardo Cavallo, to be Chief of Way & Works Department.

Mr. César La Padula, to be Acting Chief of Mechanical Department.

General Mitre Railway

Mr. Alejandro Muzzio, to be Chief of Traffic Department.

General Roca Railway

Mr. A. D. Antúnez, to be Acting Chief of Traffic Department.

Mr. R. V. Turkula, to be Acting Chief of Stores Department.

Mr. David Hill, Commercial Superintendent's Office, York, North Eastern Region, who, as recorded in our March 9 issue, has been appointed Assistant District Passenger

Superintendent, Newcastle, joined the North British Railway at Edinburgh in 1919, and after occupying various posts in Edinburgh and Glasgow was appointed a traffic apprentice, in 1927. From 1930 to 1945 he held a number of posts in the Goods Manager's Office at Glasgow, including Chief Claims Clerk and Head of the General Section. In 1945 Mr. Hill became Assistant at the All-Line Commercial School at Darlington and in March, 1950, joined the Commercial Superintendent's Office at York as a member of the Branch Lines Committee.

We regret to record the death on April 6 of Mr. Archibald McIntosh, District Engineer, Inverness, British Railways, Scottish Region.

Mr. Ranald J. Harvey, Consulting Engineer, New Zealand Government Railways, recently underwent an operation and has now returned to his office in Victoria Street, London.

Under the scheme for seconding British railway officers to assist Colonial railways, Mr. E. Dalton, Head of Traffic Section, Chief Regional Office, York, North Eastern Region, has been appointed District Traffic Superintendent, Nigerian Railways. He will leave for West Africa at the end of April.

We regret to record the death at the age of 86 of Mr. H. Osbourne Bennie, who retired as a Director of Scottish Machine Tool Corporation Limited in March, 1950. Mr. Bennie became Managing Director of the Corporation in 1938 and held this appointment until 1944; thereafter he continued as a member of the board until his retirement.

MEMORIAL TO SIR HERBERT WALKER

Since Sir Herbert Walker's death in 1949, suggestions have been made that some visible and permanent memorial should be provided to commemorate the outstanding work he did for so many years as General Manager of the London & South Western and Southern Railways.

Though the precise form the memorial should take cannot yet be decided, the former Directors and Officers are supporting the scheme, and it is their unanimous wish that all members of the staff (both active and retired) who knew Sir Herbert Walker should be invited to join. Subscriptions of any amount from 1s. to £5 should be sent to Mr. John Elliot, Chairman, Railway Executive, 222, Marylebone Road, N.W.1.

Improved British-Norwegian Services

We are informed by the Bergen Steamship Co. Ltd. that the information given on the improved connections between Britain and Norway in the overseas columns in our March 23 issue was inaccurate in some details.

From June 16 the new "Bergen Express" (not "North Sea Express," a name previously considered but rejected) will depart from Bergen at 3.30 p.m. every Sunday, Tuesday, and Thursday, and arrive in Oslo at 11.20 p.m. In the reverse direction, the train will depart from Oslo at 3.05 p.m. every Monday, Wednesday, and Saturday and arrive in Bergen at 11.15 p.m. On Sundays and Thursdays the "Bergen Express" will connect with the arrivals of the m.s. *Venus* from Newcastle and will enable passengers who leave Kings Cross with the "Norseman" at 9 a.m. on Wednesdays and Saturdays to reach Oslo at 11.20 p.m. the following day. The overall journey time of 38 hr. 20 min. is the fastest recorded (except by air) between the two capitals and compares with 42 hr. by the same route before the war.

The new "Bergen Express" is a diesel train and performs the journey of 307 miles between Bergen and Oslo in 7 hr. 50 min., a creditable timing in view of the difficult route and eight intermediate stops.

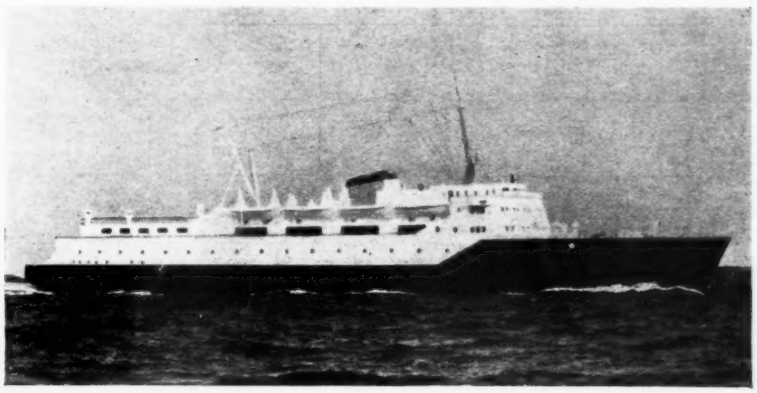
The reference to the "North Sea Express" running nightly each way between Bergen and Oslo should not be related to the new train, but to the ordinary sleeping car service which runs throughout the year. The ships of the Bergen Steamship Company sail only thrice weekly in each direction, as between April 23 and June 9, but from June 11 until September 8 there will be five sailings weekly in each direction with the motor vessels *Venus* and *Astrea* and the steamship *Jupiter*.

Launch of New Ferry for Dover-Dunkirk Service

The new ship for the Dover-Dunkirk train ferry service, of which some details were given in our January 12 issue, was launched at Elsinore, Denmark, on April 5 at the yard of the builders, the Elsinore Shipbuilding & Engineering Company, and named *Saint Germain* by Madame Armand, wife of Monsieur Louis Armand, Director General of the French National Railways. The *Saint Germain* is the first train ferry vessel to be constructed on behalf of the French National Railways for the Dover-Dunkirk service at present worked by British Railways and the A.L.A. Steamship Company, whose vessels *Hampton Ferry*, *Shepperton Ferry* and *Twickenham Ferry* have maintained the service since its inauguration in 1936.

Monsieur Goursat, Directeur du Service de l'Armement of the S.N.C.F., and Director of the Northern Region, at a luncheon after the ceremony referred to the growth of train ferry traffic between Britain and the Continent, and paid a tribute to the memory of the late Sir Herbert Walker, General Manager of the Southern Railway, and of the late Monsieur Javary, General Manager of the Northern Railway of France, who, he said, foresaw the future for the train ferry service.

Others present included, besides representatives of the Danish and French Governments, Mr. E. Terkelsen, Director General of the Danish State Railways, and Mr. R. E. Sinfield, Continental Superintendent, Southern Region, representing British Railways.



Impression of train ferry "Saint Germain" (see article above)

The Trans-Arabian Railway

(*Concluded from page* 443)

detour to follow the Wadi Sahaha route up into the high barren plateau country on which Riyadh is situated. A large modern station is already being built at the capital, which recalls to mind the magnificent station at Teheran in Persia, through which no trains ran for some years due to delays in completing the line.

In view of the natural abundance of oil it was only to be expected that diesel-electric traction was decided on to operate the Government Railway. Fifteen diesel-electric locomotives are in service with more on order. The majority are 1,000 h.p., but four, for use on the piers and in the yards of Dammam Port, and in the new marshalling yards at Abqaiq, are 600 h.p.

In the first place only flat wagons were shipped out to Saudi Arabia, but to begin the passenger service early in 1949, 15 passenger bodies arrived from America and were fitted to flat wagons. The accommodation offered is not of the greatest comfort, but it is adequate for the short journeys and high speeds attained. Three air-conditioned coaches have now arrived, and more are on order, for the extension of the line. A comfortable express runs daily from Dhahran to Abqaiq and Hofuf, often conveying Americans in one of the new coaches next to the locomotive, with two ordinary coaches and four or five flat wagons trailing.

Seventy-five Americans, 230 Saudi Arabs, and a few Indians make up the 320 workers on the King's railway. Desert nomads who, five years ago, were unable to comprehend a wheelbarrow are today driving diesels.

Plans exist for the extension of the railway beyond Riyadh to the Red Sea port of Jeddah, taking a route to pass 15 miles south of the Holy City of Mecca (on which no infidel eye is permitted to gaze). From Jeddah it will be comparatively easy to construct a line to Medina, over a route surveyed early in the century, to join the derelict Hedjaz Railway, which can be reconstructed.

XUM

British Transport Commission Statistics (Period No. 2)

Summary of the principal statistics for the four-week period ending February 25

STAFF

	B.T.C. Head Office	British Railways	London Transport	British Road Services (Road Haulage)	Road Passenger (Provincial & Scottish)	Hotels & Catering	Ships & Marine	Inland Waterways	Docks, Harbours, Wharves	Railway Clearing House	Commercial Advertisement	Legal	Films	Total
Number ...	242	599,715	98,487	76,017	59,468	17,451	6,115	4,905	18,785	664	208	287	32	882,376
Inc. or dec.	+ 1	+ 3,955	+ 417	+ 37	+ 104	+ 22	+ 27	+ 36	+ 109	+ 2	+ 2	+ 6	+ 2	+ 3,582

BRITISH TRANSPORT COMMISSION TRAFFIC RECEIPTS

	Four weeks (Period No. 2)		Aggregate for eight weeks	
	1951	1950	1951	1950
	£000	£000	£000	£000
British Railways				
Passengers...	5,899	6,101	11,532	12,153
Parcels, etc., by passenger train	2,401	2,134	4,648	4,186
Merchandise	7,234	6,377	13,983	12,508
Minerals	2,688	2,306	5,266	4,675
Coal & coke	6,879	5,678	13,208	11,102
Livestock	71	85	133	181
	25,172	22,681	48,770	44,805
British Railways C & D. & other road services ...	748	673	1,480	1,343
Ships and Vessels	558	472	1,116	1,001
London Transport				
Railways	1,196	1,092	2,388	2,215
Buses & coaches	2,321	2,244	4,595	4,486
Trams & trolleybuses	729	802	1,469	1,602
	4,246	4,138	8,452	8,303
British Road Services Freight charges, etc.	5,710	4,291	10,793	8,570
Road Passenger Transport	2,648	2,341	5,234	4,797
Docks, Harbours & Wharves ...	952	847	1,771	1,672
Inland Waterways	119	112	233	228
Hotels & Catering	1,059	968	2,072	1,978

LONDON TRANSPORT

	Passenger journeys	Inc. or dec. per cent. over 1950	Car miles	Inc. or dec. per cent. over 1950
	000		000	
Railways...	47,714	+ 3·5	17,666	+ 2·0
Buses & coaches	206,764	+ 0·8	24,774	+ 3·9
Trams & trolleybuses	73,284	+ 17·0	7,302	+ 14·9
Total	327,752	+ 4·4	49,742	+ 1·4

INLAND WATERWAYS

Tonnage of traffic and ton miles

	Tonnage	Inc. or dec. per cent. over 1950	Ton Miles	Inc. or dec. per cent. over 1950
	000		000	
Coal, coke, patent fuel & peat	404	+ 1·4	5,180	+ 12·4
Liquids in bulk	156	+ 17·6	3,500	+ 26·8
General merchandise	254	+ 0·6	4,117	+ 2·1
Total	814	+ 3·9	12,797	+ 0·7

BRITISH RAILWAYS

Rolling Stock Position

	Operating stock	Number under repair	Available operating stock	Serviceable stock in 1950
Locomotives	19,622	3,372	15,467	15,778
Coaching vehicles	58,097	5,555	52,542	51,329
Freight wagons...	1,107,306	72,010	1,035,296	1,022,612

BRITISH RAILWAYS

Passenger Journeys (Month of January, 1951)

Full fares	Monthly returns	Excursions, cheap day, etc.	Other descriptions	Workmen	Season tickets	Total	Inc. or dec. per cent. over 1950
5,704,000	7,784,000	16,642,000	3,156,000	19,474,000	35,099,000	87,859,000	+ 1·0

BRITISH RAILWAYS

Freight Tonnage Originating and Estimated Ton-Miles (Period No. 2)

	Minerals	Merchandise	Coal & coke	Livestock	Total	Inc. or dec. per cent. over 1950
	000	000	000	000	000	
Tons originating ...	4,781	4,176	13,773	42	22,772	+ 0·9
Ton-miles	388,112	558,448*	843,758		1,790,318	+ 1·6

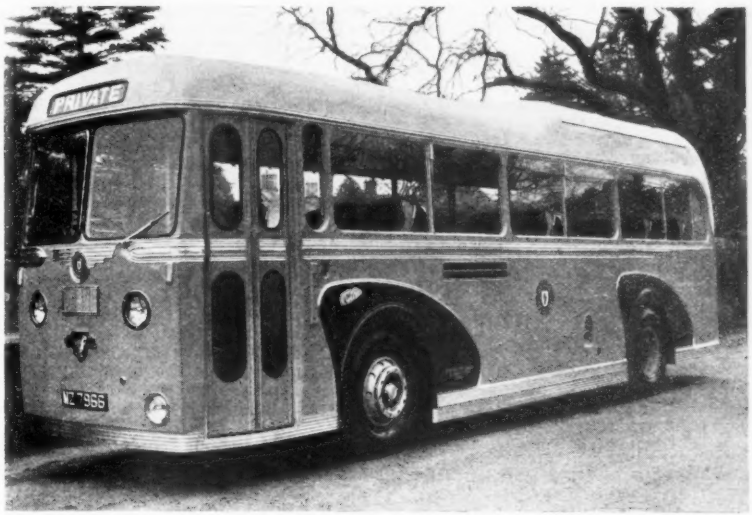
* Includes livestock

BRITISH RAILWAYS (Period No. 2)

	Total steam coaching train-miles	Total electric coaching train-miles	Total freight train-miles	Freight train-miles per train engine-hour	Net ton-miles per total engine-hour	Locomotive coal consumption	
						Total tons	Lb. per engine-mile
1951	12,969,000	3,589,000	11,050,000	7·8	570	1,069,000	65·5
1950	14,128,000	3,714,000	11,093,000	8·1	567	1,112,000	65·9

New Saloon Motorcoach for Ulster Transport Authority

Vehicle built in Authority's workshops to give improved comfort on special tours and for parties



Prototype 19-seater motorcoach built by the Ulster Transport Authority

The Ulster Transport Authority has constructed in its Duncrue Street Works, Belfast, a prototype motorcoach, with seating for 19 passengers, and table and lavatory accommodation, and intended for touring and hire by private parties. The coach was officially inspected on April 5.

The vehicle is built to the maximum dimensions permissable with Northern Ireland public service vehicle regulations. The chassis is the Leyland "Royal Tiger" under-floor diesel engine type, 30 ft. long and 7 ft. 6 in. wide, with a wheelbase of 15 ft. 7 in.

The 600-cu. in. diesel engine, flexibly mounted, develops 125 b.h.p. A quick-change synchro-mesh four-speed gearbox affords rapid and easy gear changing. The steering layout embodies a divided track-rod with centrally mounted fulcrum, giving vibrationless, positive, and extremely light steering. All units are easily accessible and may be readily serviced from the sides of the vehicle without the necessity of using a pit.

Bodywork

The design of the body provides maximum amenities in observation, seat comfort, ventilation, air conditioning, luxurious interior decoration, luggage accommodation, and toilet facilities. Construction is of composite timber and metal construction panelled with lightweight aluminium panels of sufficient stability to give freedom from drumming when vehicle is in motion. Large panelled adjustable windows give maximum low and high level visibility. All windows are of the balanced full-drop type adjustable by passengers.

Toughened safety glass is provided in windscreens, the bulkhead window behind the driver, and entrance doors. Rear windows are curved and of clear Perspex fixed with vibration-proof self-sealing rubber section. There are drop windows on each side, adjusted by top lift operating finger controls.

The seating layout consists of seven single seats offside, all facing forward, and six double seats on nearside. Two pairs of these face with a folding table between facilitating party travel. Seats are of the Accles & Pollock, Dapta De-luxe adjustable reclining type with hand operating control for three positions. Each seat can be individually adjusted. The seat width is 20 in. per passenger.

Incorporated with the seat are armrests on body and gangway sides with centre armrest on two passenger seats. There are adjustable footrests, chrome-plated top rails with remainder of frame in fawn, polychromatic finish. Cushions, armrests and squabs with headrest are of Dunlopillo Latex rubber. Seats are trimmed with cut moquette of vertical pattern in a combination of light and dark blue, brown, and fawn. Fume-proof chrome-plated ashtrays partially recessed into the seat back are provided for each seat. There are nets on the rear of each seat, and on the body side adjacent to each seat, for personal effects.

Bodyside panels up to waist level are covered with beige colour, vynide leather-cloth material of antique grain. From waist to the top of windows and generally around the saloon mouldings are of birch timber, natural colour finish with lower waist moulding of medium walnut. Bird's Eye maple plastic relief panels are inserted on vertical pillars.

The roof centre ceiling panels are processed with Alhambrinal decorative panels of pebble grain finish of ivory white colour; they incorporate motif design within the four circular roof lamps. The roof quarters, including front and rear dome, are similarly processed with Alhambrinal fine grain ivory white panels incorporating light blue panel designs. The centre ceiling panels are surrounded with moulding of medium walnut.

Exterior Finish

All the exterior presents a flush finish. All metal moulding reliefs are highly polished alloy.

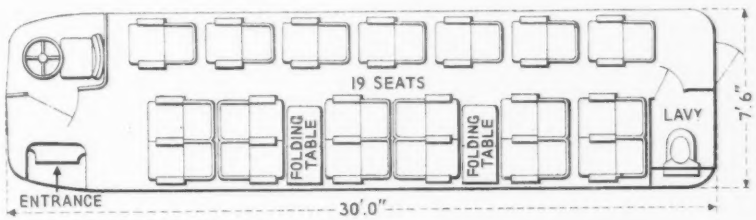
The exterior colour scheme incorporates special blue-green on the front and side lower panels to top of windows with lower panels to waist moulding at the rear, mid-Brunswick green for mudguards including flared panels and wheels, and special pale green for roof above windows front and side down to waist mouldings at rear end. The whole exterior painting process is carried out with I.C.I. Dulux Synthetic enamels.

The floor is covered with linoleum of marble design of light and medium blue with beige colours. Detachable Wilton carpets of light blue, with dark blue and fawn colours of relief pattern, are fitted in the gangway and between seats.

Lighting is by 24-volt system. Saloon lighting within balanced efficiency is given by four three-light circular roof lamps, of convex decorated translucent shade with polished chromium-plated rim. Strip lighting is incorporated above windows. All lighting is controlled from instrument panels in the driver's cab.

Ventilation and heating is effected within the application of the pressurised system. The fresh air intake is provided through grilled panels below bodyside waist band on the sides and front of the vehicle.

The saloon temperature is thermostatically controlled. Fresh air is distributed to the saloon by ducting at the bodyside at floor level with grilled inlets under the seats. The front Clayton heater is fitted into the front end body panel on the interior below the waist level fitted with chromium-plated grilled cover.



Layout of new U.T.A. motorcoach

Laminated rot-proof plywood flooring panels with rubber insulation between chassis contacts and flooring combines with the floor covering to reduce noise and vibration from the underfloor engine. The roof is insulated with "Isoflex" lightweight material which allows free air circulation for framing within its corrugations. The interior sides of the body are lined with hardboard panels.

The driver's cab is fully forward type with bulkhead to rear of driver. All controls are fitted with adequate draught and dust excluders. The driver's seat is adjustable vertically and horizontally. There is

access to cab from main saloon with waist height door to nearside of driver.

The entrance doorway is placed on the nearside ahead of the front wheels. It has two entrance steps of aluminium non-slip chequer plate, and safety non-slip inserted rubber treads. There are two single-panel entrance doors with high and low level glazed windows. The doors open from the centre and operate by C.A.V. electrically powered mechanism controlled by the driver. Rubber for hand protection is fitted to all vertical edges of doors. An emergency door at the rear end has three-point locking and safety chain. There is a rear compartment with capacity of 46 cu. ft. with automatic illumination and rear hinged valance for access opening downwards to form a loading platform.

Southern Region Staff Conference

The last of this season's informal Staff Conferences, conducted by Mr. C. P. Hopkins, Chief Regional Officer, Southern Region, was held at the Arts Theatre, Salisbury, on April 11, when about 350 members of the Southern Region staff drawn from the Salisbury-Southampton-Exeter area attended.

The object of these informal Staff Conferences is frank discussion on matters of mutual interest to the management and the staff, and to invite suggestions and opinions for the improvement of railway working. Supporting Mr. Hopkins on the platform were the Chief Officers and principal assistants of practically all departments, with representatives of the three railway trade unions.

At the all-day meeting the subjects of questions and answers included the consultative procedure at all levels, staff transfers, promotion arrangements, mess room accommodation, matters affecting Officers on ferry steamers, clothing, stationery supplies, the issue of free travel facilities, the possibility of creating a Regional staff fund for charitable purposes, and other items affecting the various departments of the Southern Region.

Railway Display at the South Bank Exhibition

The larger railway exhibits which will be seen at the South Bank Exhibition in London between May 4 and September 30 are now installed in the Transport & Communications pavilion, which will feature the British contribution to the development of world transport.

Of those so far housed the biggest is a "WG" class 2-8-2 locomotive built for the Indian Government Railways by the North British Locomotive Co., Ltd. The two other modern exhibits are a 660 h.p. Vulcan Foundry Limited diesel-electric locomotive for the 3 ft. 6 in. gauge Tasmanian Government Railway and an aluminium-alloy trailer motor car built by the Metropolitan-Cammell Carriage & Wagon Co. Ltd. for London Transport surface lines; part of this coach is sectionalised to show construction and equipment.

Old locomotives include the famous 2-2-2 Buddicom locomotive brought from France, where it was built in the early 1840's by Allcard, Buddicom & Cie, at Chartreux, near Rouen. Locke, Brassey, and Buddicom were responsible for the development of this type—known in this country as the Crewe type—which was long favoured by foreign railways. Even older is the 0-4-0 locomotive *Agenoria*, built in 1829; it was still running on a colliery railway in this country until after the middle of last century. The high chimney of *Agenoria* had to be removed and will be replaced by a shorter chimney, similar to that carried by *Stourbridge Lion*, a sister engine. Both the Buddicom and *Agenoria* are mounted on rollers.

On a section of Brunel's broad-gauge, bridge rail, track, stands a pair of wrought-iron 8 ft. driving wheels which belonged to *Lord of the Isles*. The signalling section so far includes a slotted signal, disc-and-crossbar signal and a typical signal of the late Victorian or Edwardian eras.

Reached from the grounds of the South Bank Exhibition will be the separate exhibit of British Railways, comprising an "EM1" class electric locomotive for the Manchester-Sheffield-Wath electrification; a new Class "7" standard Pacific steam locomotive; and the new diesel-electric express passenger locomotive No. 10201. These three locomotives are in position but remain sheeted over.

Illustrations of a number of the exhibits have already been published in previous issues as they have arrived at the London site of the Festival of Britain.

Questions in Parliament

Railway Freight Charges

Major J. A. Boyd-Carpenter (Kingston-upon-Thames—C.) on April 9 asked the Minister of Transport if he would give an assurance that he would not exercise his powers under Section 82 of the Transport Act, so as to effect any further increase in railway freight charges until the House had had an opportunity to discuss them.

Captain Peter Thorneycroft (Monmouth—C.) also asked the Minister of Transport, whether he had yet received any report from the Transport Tribunal.

Mr. Alfred Barnes then replied as recorded in our April 13 issue, announcing an increase of 10 per cent. in charges as from April 16.

Major Boyd-Carpenter: In selecting April 16, did the Minister take into consideration the desirability of the opinion of this House being obtained before they came into effect, in view of the serious repercussions on the national economy?

Mr. Barnes: These regulations can be annulled by prayer, and that gives an opportunity to the House to discuss them. Before the House rose for the Easter recess I stated that I had referred this to the permanent members of the Transport Tribunal. Their report and recommendations to me stressed the urgency of preventing this deficit from accumulating because of its reactions on the wages schemes that are coming forward very rapidly now.

Mr. R. A. Butler (Saffron Walden—C.): May I ask the Minister to consult with the Leader of the House with a view to this House having the earliest possible opportunity of a discussion upon this vital matter?

Mr. Barnes: I will consult with the Leader of the House, and, of course, he has heard the observation.

Mr. Winston Churchill (Leader of the Opposition): Could we not have an answer now?

Mr. John McGovern (Shettleston, Glasgow—Lab.) drew attention to the bad effect of increased transport charges on foodstuffs and other goods consigned to Scotland and outlying areas.

Mr. Barnes said that the charges schemes were due to come before the Transport Tribunal, and that that was the machinery especially established for giving detailed consideration to these wider problems.

Mr. Churchill asked whether the Leader of the House could give some answer.

Mr. Chuter Ede: This is not a matter for which the Government need give time, because it can be raised by the Opposition on a prayer. However, we are about to have some consultations about prayers, and this matter might well be discussed through the usual channels. I recognise that this order is among the more important class to which the House might very well wish to give some good consideration.

Mr. Churchill: It is a very heavy tax upon the public, and I feel quite sure that the Government, in discussions through the usual channels, will attach proper weight to the fact that it is executive action and requires Parliamentary consideration.

Mr. Ede: I hope the answer I have just given indicated that I share the view of Mr. Churchill.

Mr. Walter Monslow (Barrow-in-Furness—Lab.): Will the Minister consider giving a direct subsidy to the industry, as was given to private enterprise to the extent of £100 million in 1919, 1920 and 1921?

Precedent for Public Inquiry

Captain Peter Thorneycroft stressed that there had been no public inquiry before the Transport Tribunal gave their advice, and that there had been a full debate before the rate increase of May, 1950.

Major C. C. Poole (Perry Bar, Birmingham—Lab.) asked for an independent inquiry into nationalised transport.

After other Members had commented on the adverse effects of increased rates on the economy of the remoter parts of Scotland, Mr. James Harrison (East Nottingham—Lab.) asked how much the Minister estimated that the 10 per cent. increase would yield, and whether it would cover the current deficiency.

Mr. Barnes: It is estimated that this 10 per cent. increase will in a full year bring in £20 million. That will not cover the present total deficiency.

Captain John MacLeod (Ross & Cromarty—Ind. Lib.): Will the Minister realise that unless advice given by bodies like the Highland Advisory Panel and the Cameron Committee are taken into account, people in the North will feel that it is useless for these bodies to be set up?

Mr. Barnes: I am sure the Tribunal, when the charges scheme is before it, will give full consideration to the views of bodies of that sort.

Cold Storage Vehicles

Colonel A. D. Dodds-Parker (Banbury—C.) on February 28 asked the Secretary of State for the Colonies, whether he would arrange to send out to East Africa demonstration units of road and railway vehicles for the cold-storage carriage of foodstuffs.

Mr. James Griffiths: This would be a matter for the Transport Authority in East Africa. Their view is that such an experiment at the expense of public funds is not justifiable at present.

Damage to Flour in Transit

Group Captain G. R. Ward (Worcester—C.) on March 19 asked the Minister of Food whether he was aware that about 12 tons of flour recently were damaged by water in the Western Region of British Railways at Worcester, and what steps he was taking to ensure that food in transit was carefully handled.

Mr. F. T. Willey (Parliamentary Secre-

tary to the Ministry of Food) in a written answer stated: Yes. It started raining while the men who had been transferring the flour from a railway truck to a dray were at lunch, and they had not covered the bags. Every precaution is taken by my officers when making transport arrangements to ensure that suitable vehicles are used.

Buenos Aires Transport Corporation

Mr. W. Teeling (Pavilion, Brighton—C.) on March 12 asked the Secretary of State for Foreign Affairs whether, in view of the concern felt by British shareholders in the Buenos Aires Transport Corporation as a result of the Argentine Government decision to liquidate it at an early date, he would give an assurance that the British Government mission to Argentina would try to obtain an undertaking from the Argentine Government to settle these large British transport claims satisfactorily.

Mr. Kenneth Younger (Minister of State) stated in a written answer: The efforts made over a long period to secure a satisfactory settlement will be fully maintained.

Contracts and Tenders

The Western Australian Government Railways have recently placed the following contracts:—

Gloucester Railway Carriage & Wagon Co. Ltd.: 72 bogie flat-wagons, type "QC."

Metropolitan-Cammell Carriage & Wagon Co. Ltd.: 760 four-wheel wagon underframes, specification 706; 710 type "DC" semi-louvred timber bodies.

The Egyptian Government has recently placed an order with the Metropolitan-Cammell Carriage & Wagon Co. Ltd. for 24 second class carriages.

Tenders have been invited by the Western Australian Government Railways for 22 diesel railcars in accordance with its specification No. 724 and specified drawings. Specifications are available on application, and drawings may be obtained on payment of £3 per set, from the Office of the Government Tender Board, 74, Murray Street, Perth. Tenders close at the Tender Board, Perth, at 10 a.m. on May 17, 1951.

The Board of Trade, Commercial Relations & Exports Department, Special Register Information Service, recently stated that the United Kingdom Trade Commissioner at Johannesburg has reported that the South African Railways have issued a call for tenders (No. A. 2326) for the supply of the following equipment: 600 track jacks Type "A"; 120 track jacks Type "B" (The Jacks are to be supplied complete with lifting handles and must conform to Specification CCE. 2/20-1950 (As amended November, 1950), to which Diagram RD209, illustrating clearances for Type "B" Jacks is attached).

Tenders must reach the Chairman of the Tender Board, P.O. Box 7784, Johannesburg, by 9 a.m. on Thursday, June 7, 1951. It can be taken that an import permit will be forthcoming if the tender is placed overseas.

A copy of the tender documents is available for inspection by representatives of interested United Kingdom manufacturers at the Commercial Relations & Exports Department (Industries Branch), Board of Trade, Thames House North, Millbank, London, S.W.1. Reference CRE(IB)58463/51 should be quoted.

Notes and News

Transport Tribunal, Change of Address.—As from April 19, the postal address of the Transport Tribunal has been: Transport Tribunal, Watergate House, 15, York Buildings, Adelphi, London, W.C.2; telephone No.: Trafalgar 7194/7195.

Thos. Cook & Son Ltd. Sports Club.—The newly-formed variety Section of the Thos. Cook & Son Ltd. Sports Club will present its first show, "All At Sea," at the Portcullis Theatre, Westminster, on April 26, 27 and 28. The cast of 38 will depict scenes aboard an ocean-cruising ship.

New York Central Traffic Decline.—The New York Central system announced on April 9, because of a decline in traffic, that it was standing off several thousand employees in 11 States. It gave as other reasons the recent rise in wages and in costs of materials. The system employs about 110,000 persons.

Kelvedon and Tollesbury Branch Line.—British Railways, Eastern Region, has announced that as from May 7 the passenger train service will be withdrawn from the following stations and halt on the Kelvedon-Tollesbury branch: Feering Halt, Inworth, Tiptree, Tolleshunt Knights, Tolleshunt D'Arcy, Tollesbury. Parcels and other miscellaneous passenger train traffic will continue to be dealt with at Tiptree, Tolleshunt D'Arcy and Tollesbury Stations until further notice.

Departure Times of Continental Boat Trains.—Wtih the introduction of summer time on April 15, the Southern Region "Golden Arrow," "Night Ferry," Newhaven-Dieppe, Folkestone-Calais, and Dover-Ostend services to the Continent are leaving London (Victoria) and the Channel Ports one hr. later than at present. In the inwards direction, all services will arrive at the English ports and in London one hr. later, with the exception of the "Night Ferry," which will remain unaltered.

New Tourist Information Centre in London.—On April 6 Mr. Herbert Morrison, the Foreign Secretary, opened the new tourist information centre of the British Travel & Holidays Association at 64-65, St. James's Street, London, S.W.1. The centre is operated for the particular benefit of overseas visitors. Last year the staff at the centre, then at Whitcomb Street, dealt with more than 93,000 enquiries. This year the number is expected to exceed 100,000. Mr. Morrison said that the Association had increased the tourist trade of the country by 50 per cent. and helped to improve the standard of hotel services and accommodation. Sir Alexander Maxwell, Chairman of the Association, spoke of the record number of visitors to Britain: in February there were 25,000 compared with 21,000 in February last year.

Coal Prices Increase: Effect of Increased Rail Freights.—The Ministry of Fuel & Power has announced that the retail price of coal is to be increased because of higher rail freight charges. The increases will range from a few pence to 4s. a ton, according to the distance railborne. It is stated by the British Electricity Authority that no immediate revision of electricity tariffs is expected. Area boards are already revising their tariffs to meet February's increase and to absorb other increased costs.

Road Haulage Charges.—As a result of mounting costs, including the increased tax on petrol and fuel oil which alone costs nearly £1,500,000 a year, the Road Haulage Executive states that it is obliged to raise its general haulage rates by 2 per cent. for journeys not exceeding 40 miles and 3 per cent. for journeys exceeding this distance. As the burden of the higher costs has fallen upon the Executive already, the adjustment of charges must take place as from April 23. Suitable adjustments will be made in respect of parcels rates at an early date.

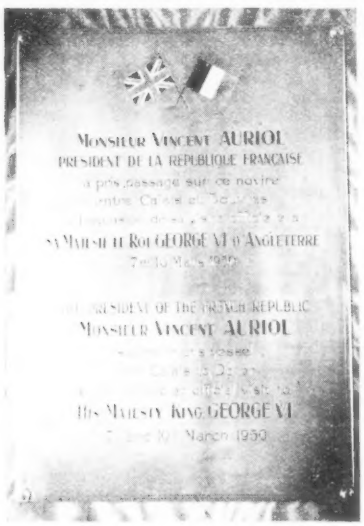
Bombay Port Trust.—During the fiscal year 1949-50 the Bombay Port Trust obtained a surplus of Rs4·77 lakhs (£35,625) on the general account as against an expected deficit of Rs41·15 lakhs. This favourable situation was due to an unexpected arrears payment of Rs20 lakhs by the Government, and a saving in expenditure of Rs23½ lakhs resulting from deferment of works for want of materials. The most important event of the year was the clearance of the docks congestion which had threatened to immobilise the port in 1948-49. The Port Trust Railway showed a deficit in working of nearly Rs28 lakhs, considered to be due largely to revision of the rates structure not having been finalised in agreement with the Government. Expenditure was roughly Rs5 lakhs higher than in the previous year owing to a revision of grades and increased cost of locomotive repairs and maintenance. Revenue from freight handled was over Rs7 lakhs higher than in 1948-49. The mile-

Interior of new Tourist Information Centre of the British Travel & Holidays Association in London

age of line worked by the P.T.R. is 136, all of 5 ft. 6 in. gauge, and it owns 23 locomotives and 678 wagons.

Buenos Aires Transport Corporation.—The Argentine Government is to take over the Buenos Aires Transport Corporation. When tenders for the purchase of the corporation's physical assets were opened in Buenos Aires on April 16, it was found that the Argentine Government, acting through the Minister of Transport, was the only bidder. It bid 410,000,000 pesos (about £10,250,000) and announced it had already deposited about £250,000 worth of public bonds as down payment.

Commemorating French President's Visit.—To commemorate the visit of the President of the French Republic, Monsieur Vincent Auriol, and Madame Auriol, to England in March, 1950, a plaque has been


MONSIEUR VINCENT AURIOL
PRÉSIDENT DE LA RÉPUBLIQUE FRANÇAISE
SA MAJESTÉ LE ROI GEORGE VI D'ANGLETERRE
THE PRESIDENT OF THE FRENCH REPUBLIC
MONSIEUR VINCENT AURIOL
HIS MAJESTY KING GEORGE VI

Commemorative plaque in s.s. "Arromanches"

placed on board s.s. *Arromanches* in which the President sailed between Calais and Dover. The *Arromanches* normally works the Newhaven-Dieppe service of British Railways, jointly with the French National Railways.

West German Locomotive Industry.—An agency report states that the West German locomotive industry hopes to export five times as many locomotives this year as in 1950, when 12,000,000 marks' worth (including about 6,400,000 marks' worth of electric and diesel locomotives) were shipped, compared with 4,000,000 in 1949. The main destinations were countries in the Middle East, Far East, and South America. Raw material supplies in general are described as "not too bad." It was hoped that under a system of raw material allocations for export industries now being prepared by the Western German Government the locomotive industry would receive a substantial share. Domestic business was chiefly hampered by the financial difficulties of the Federal Railways, the main domestic customer of the locomotive factories. Orders from the Federal Railways were chiefly for repairs, with only a few for new construction. The Krupp locomotive works at Essen hopes to increase output as soon as its steelworks at Rheinhausen receives larger coke and coal allocations. The works is now constructing 100 locomotives each for South Africa and Indonesia, and has received a smaller order from the German Federal Railways. A member of the firm said it would be a considerable time before it could reach pre-war production figures. The difficult situation of the rolling stock industry has not improved. The number of wagons repaired in February was only 2,597 (compared with a monthly average of 4,338 in 1949), and the number of newly-built wagons produced during the month was 53 (1,102).

G.N.R.(I.) Purchase Talks End.—Talks on the future of the Great Northern Railway (Ireland) between representatives of the Republic of Ireland and Northern Ireland Governments ended in Dublin on April 16. Compensation of £3,900,000 is being provided for the company's stockholders, and it is understood that the allocation between the Governments, and the character of legislation in both Parliaments for the acquisition of the company's assets were discussed. Mr. W. V. McCleery, the Northern Ireland Minister of Commerce, is expected to make a detailed statement in the Ulster House of Commons when he presents his estimate for approval.

Heavy Freight Traffic Through Severn Tunnel.—The Western Region announces that heavy freight traffic, largely of coal and steel from South Wales, through the Severn Tunnel has necessitated temporary suspension from April 16 to May 5 of certain passenger trains through the tunnel so as to afford additional goods train paths, and diversion of others *via* Gloucester. Among trains suspended are the 9.57 a.m., 12.35 p.m. and 3.20 p.m. from Cardiff to Bristol. The 8.20 a.m. from Neyland to Paddington is to be rerouted *via* Gloucester. Certain passenger trains over other lines in or near South Wales will be temporarily suspended to increase freight capacity.

Sailing Tickets for Ireland.—British Railways, London Midland Region, has announced that sailing tickets will be required for travellers to Ireland by the Holyhead, Heysham and Stranraer routes on certain days this summer. On the Holyhead to Dun Laoghaire (Kingstown) route sailing tickets will be required as follows: Saturdays, June 16, to July 14, inclusive (3.25 a.m. and 6.30 a.m. sailings only); Saturday, July 21 (all sailings); daily, including Sundays, July 26 to August 6, inclusive, and August 10 to 13, inclusive (all sailings); Saturdays, August 18 and 25, September 1, 8 and 15 (3.25 a.m. and 6.30 a.m. sailings only). Sailing tickets will be required between Heysham and Belfast on Friday and Saturday nights, July 6, to August 18, inclusive, and on Thursday night, July 26, and between Stranraer and Larne on Friday and Saturday only, July 13 and 14 (all sailings). Sailing tickets will also be required from Ireland *via* these routes during certain periods.

Mr. J. W. Watkins Message to L.M.R. Staff.—On his appointment as Chief Regional Officer (in succession to Mr. John Elliot, now Chairman of the Railway Executive), Mr. J. W. Watkins has addressed a message to the staff of the London Midland Region. He alludes to his 45 years of railway service, first on the Midland, then with the L.M.S.R., and later with the London Midland Region, of which last he was Operating Superintendent from October, 1948. Mr. Watkins stresses the importance of remembering that the railways exist to provide transport for passenger and freight traffics and, if they are to survive, the service they give must be efficient and expeditious. The L.M.R. is only a part of British Railways and railwaymen of the Region must always think of it as such, and adopt practices chosen as the best of those of the former companies. There is room, he continues, for tradition and *esprit de corps*, and there can be healthy and friendly rivalry between the Regions so as to engender competitive spirit, with the goal always to give the public the reliable and punctual service it wants and expects. This can be achieved by efficiency in all branches and by individual effort on the part of all concerned.

L.M. Region Special Trains for Festival Visitors.—The London Midland Region has made arrangements to carry over 250,000 passengers from provincial towns to the Festival of Britain. Nearly 160 special trains will be run, and over 2,700 excursions have been arranged by ordinary services. In addition many excursion specials will run to the Festival in connection with provincial towns "wakes" weeks.

Regulations for Increased Railway Charges.—Statutory Instrument, 1951, No. 601 (the Railways (Additional Charges) (Amendment) Regulations, 1951) by the Minister of Transport amends the Railways (Additional Charges) Regulations, 1950, and authorises the British Transport Commission to make in connection with the conveyance of merchandise on its railways additional charges equal in amount to 10 per cent. of the charges for the time being in operation. The regulations were made on April 6, laid before Parliament next day, and came into operation on April 16. This increase in charges is referred to elsewhere in this issue, and in that of April 13.

Iron & Steel Productivity Team for U.S.A.—An Iron & Steel Productivity Team, covering pig iron and heavy steel, will sail on May 17 for a six weeks' visit to the United States, under the auspices of the Anglo-American Council on Productivity, with E.C.A. technical assistance. The team will study and report on the organisation and methods of the U.S.A. iron and steel industry. It will also consider the factors bearing on the comparative productivity of the United Kingdom and U.S.A. industries, and recommend whether and by what methods U.S.A. experience can with benefit be applied or adapted in this country. The leader of the team will be Sir Charles Goodeve, Director of the British Iron & Steel Research Association, and the deputy leader will be Mr. S. Thomson, Executive Director, Colvilles Limited, and General Manager, Dalzell and Lanarkshire Steel Works.

Cartage and Terminal Supervisors Course at Woking.—The series of educational courses for cartage and terminal supervisors now being held at Woking, to which editorial reference was made in our April 13 issue, were visited by Mr. A. A. Harrison, Executive Officer (Road Transport), Railway Executive, and the Road Transport Committee on April 17. The courses are attended by a number of representatives from each English Region and teams of instructors from one separate Region are provided weekly. On April 17 the morning session was opened by Mr. E. W. Arkle, Commercial Superintendent, North Eastern Region, who welcomed the idea that each Region should sponsor a course, and hoped it would help to foster inter-Regional competition. In cartage opera-

LEGAL AND OFFICIAL NOTICES

IN THE COURT OF THE TRANSPORT TRIBUNAL

TRANSPORT ACT, 1947

DRAFT BRITISH TRANSPORT COMMISSION (PASSENGER) CHARGES SCHEME, 1951

The British Transport Commission hereby give notice that they have pursuant to Section 76 of the Transport Act, 1947, lodged with the Transport Tribunal an Application (1951 No. 498) to confirm a Charges Scheme for the carriage of passengers and their luggage by rail, road and inland waterway by the London Transport Executive and the Railway Executive as agents for the Commission.

Copies of the said Scheme can be inspected free of charge during office hours at any of the following places:—

LONDON	..	Central Office, British Transport Commission, 55, Broadway, S.W.1.
BIRMINGHAM	..	District Passenger Superintendent's Office, New Street Station.
CARDIFF	..	District Commercial Superintendent's Office, Western Region, Cymric Buildings, West Bute Street.
EXETER	..	District Traffic Superintendent's Office, Southern Region, Central Station.
LEEDS	..	District Passenger Superintendent's Office, North Eastern Region, City Station.
LEICESTER	..	District Commercial Superintendent's Office, London Midland Region, London Road Station.
MANCHESTER	..	District Passenger Superintendent's Office, London Midland Region, Hunt's Bank.
SOUTHAMPTON	..	District Traffic Superintendent's Office, Southern Region, Central Station.
YORK	..	Commercial Superintendent's Office, North Eastern Region.
ABERDEEN	..	District Traffic Superintendent's Office, Scottish Region, Guild Street.
EDINBURGH	..	District Commercial Superintendent's Office, Scottish Region, Waterloo Place.
GLASGOW	..	Commercial Superintendent's Office, Scottish Region, Central Station (87, Union Street).

Copies of the said Scheme can also be purchased at the price of 2s. 6d. per copy post free from:—

The Central Office, British Transport Commission, 55, Broadway, London, S.W.1, and from

The Commercial Superintendent's Office, Scottish Region, Central Station, 87, Union Street, Glasgow.

NOTICE IS FURTHER GIVEN that the Tribunal will hold a Public Inquiry the date and place of which will be notified hereafter.

NOTICE IS FURTHER GIVEN that by an Order of the Registrar of the Court dated the 10th day of April, 1951, it was ordered that the time for lodging with the Tribunal objections and other representations pursuant to Section 78 of the Transport Act is up to and including the 13th June, 1951, and that any body claiming to be heard at the Public Inquiry must lodge with the Registrar at his office at Watergate House, 15, York Buildings, Adelphi, London, W.C.2, on or before the 13th June, 1951, a written notice in the prescribed form (Form No. 5 in the First Schedule to the Transport Tribunal Rules, 1949, Statutory Instrument No. 989), setting out the nature of the claim to be heard and particulars of the Objection or other Representation and any modifications or variations proposed to be made in the Scheme.

Every such Notice must state the name and address of the body claiming to be heard. It must be on foolscap size paper, single sheet, and may be signed by the chairman, president, managing director, general manager or secretary of the body, or by any person authorised under the seal of the body, if a body corporate, to sign on its behalf or by any employee of the body duly authorised to represent it under Rule 51 (3) of the said Rules.

In the case of a representative body claiming to represent a class of persons using the services or facilities to which the Scheme relates the notice shall state particulars of the class represented and the nature of the authority to represent that class.

In the case of a body constituted for carrying on any Industry or Undertaking under National ownership or control the notice shall state particulars of the Industry or Undertaking nationally owned or controlled, and the use made of the services to which the Scheme relates.

In the case of a representative body claiming to represent a class of persons providing for hire or reward services or facilities similar to or comparable with the services or facilities to which the Scheme relates the notice shall state particulars of the class represented, the nature of the authority to represent that class and the similar or comparable services provided by the class.

Each Original Notice must be stamped with an adhesive fee stamp for 2s. 6d. This stamp can be purchased at the office of the Registrar when the Notice is lodged. If the Notice is sent by post it should be accompanied by a Postal Order for 2s. 6d., payable to the Transport Tribunal.

Two service copies of every such Notice shall be signed as aforesaid, sealed with the seal of the Court, and served on the Chief Solicitor to the British Transport Commission, 4, Cowley Street, Westminster, London, S.W.1, on or before the 13th June, 1951. Such service may be effected by registered post.

Six additional copies of every Notice must be lodged with the Original at the office of the Registrar.

When the time for lodging such Notices has expired a further Order will be made specifying the manner in which inspection may be had of the statements, estimates and other documentary evidence intended to be used by the Applicants in support of their application.

MILES BEEVOR,
Chief Secretary,
British Transport Commission.

13th April, 1951

WE buy used or unserviceable Steel Files at good prices, in lots of 2 cwts. or more.—THOS. W. WARD LIMITED, R.S. Department, Albion Works, Sheffield.

AN Insurance Organisation with extensive connections in the transport industry has vacancies on its Outdoor Staff for a number of young men. Excellent opportunities to those possessing good personality and anxious to succeed. Write stating age to Box 46, *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

WANTED for South American Railways—Learners for Traffic Superintendent's Department. Age 20-23 years. Single; some knowledge of Spanish and railway working preferred. Contract three years, renewable. Apply to the Secretary of the PERUVIAN CORPORATION LIMITED, 144, Leadenhall Street, London, E.C.3.

THE PERUVIAN CORPORATION LTD.—Assistant to Chief of Traction, Peruvian Railways, age 26-30; qualifications: apprenticeship with steam locomotive builders, Higher National Certificate for mechanical engineering, or graduate of Institute of Mechanical Engineers, a knowledge of Spanish an advantage.—Apply to the Secretary of the PERUVIAN CORPORATION LIMITED, 144, Leadenhall Street, London, E.C.3.

INTERNATIONAL RAILWAY ASSOCIATIONS. Notes on the work of the various associations concerned with International traffic, principally on the European Continent. 2s. By post 2s. 2d. *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

RAILWAY MAINTENANCE PROBLEMS. By H. A. Hill (late District Engineer, L.M.S.R.). Valuable information. With much sound advice upon the upkeep of permanent way. Cloth, 8½ in. by 5½ in. 82 pp. Diagrams. 5s. By post 5s. 3d. *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

DIRECTORY OF RAILWAY OFFICIALS & YEAR BOOK. A useful reference book for railway officers, engineering firms, and all who do business with railways. The only Directory which enables one to find the right railway and the right officer at the right moment. Issued July each year. Price 30s. *net*. Tothill Press Limited, 33, Tothill Street, London, S.W.1.

THE "PAGET" LOCOMOTIVE. Hitherto unpublished details of Sir Cecil Paget's heroic experiments. Eight single-acting cylinders with rotary valves. An application of the principles of the Willans central-valve engine to the steam locomotive. By James Clayton, M.B.E., M.I.Mech.E. Reprinted from *The Railway Gazette*, November 2, 1945. Price 2s. Post free 2s. 3d. *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

tions efficiency was of supreme importance and the courses should prove of great value. The subject for discussion "Functions & Objects of Zonal Services and Improvement of Transits," was introduced by Mr. J. Winter, of the North Eastern Region, and various Regional practices were commented on in the discussion which followed. Mr. A. C. B. Pickford, Executive Officer (Terminals), Railway Executive, who also was to have visited the course on April 17, was unavoidably absent.

G. D. Peters & Co. Ltd.—After allowing for depreciation and other charges the consolidated profit of G. D. Peters & Co. Ltd. for 1950 was £160,671 as compared with £228,659 the year before. After payment of a dividend of 17½ per cent., which is the same as for the previous twelve months, there remains £51,991 to be carried forward as compared with £49,938 a year ago.

Tube Investments Exhibit at British Industries Fair.—Tube Investments Limited stands at the British Industries Fair, Castle Bromwich, Birmingham, will offer a cross-section display of the products manufactured by its precision steel tube, cold rolled metal sections and aluminium companies. Apart from a show of the general range of seamless and welded tubes in steel, stainless steel and aluminium alloys there will be a special display of small tubes and many small bore, composite and non-circular tubes used in scientific research and new industrial processes. Also exhibited will be high-pressure cylinders; a series of cold rolled metal sections for the building industry, including nailable steel joists; aluminium beams and girders; tubular forgings; and stainless steel tubes and fittings for the dairy industry.

Churchill Machine Tool Company.—The final dividend on the ordinary shares of the Churchill Machine Tool Co. Ltd. is 15 per cent., making 30 per cent. for the year (both as for 1949). The net profit for 1950 after all charges, including taxation, is £164,704 (£119,909). Taxation in the United Kingdom was £201,500 (£140,500). Dividends absorb £46,221 (£47,296).

Costa Rica Railways.—Presiding at the recent annual general meeting of the Costa Rica Railway Co. Ltd., the Chairman, Mr. H. C. Drayton, said that the amount received from the susidiary company on account of rental was £48,436, which was remitted from Costa Rica before the floods in December, 1949. That sum and £6,632 income from investments, enabled them again to pay a year's interest on the first mortgage debentures and other expenses. After appropriation of £3,000 for debenture sinking fund, there was a balance of £1,508 towards payment of second debenture interest. That balance, added to £966 brought forward from previous years, gave £2,474 available for second debenture interest. As that represented only 0.41 per cent. on the second debentures, no interest payment could yet be made. The net operating profit, after debiting depreciation but before charging rental or flood damage was $206,026. After deducting rental and New York administration expenses, there was a net loss of $196,111, increased to $621,738 after charging $425,627 for 1949 flood damage. Mr. Drayton referred to further landslides in 1950, and to recent Governmental approval of further wage increases, which might cost them another $30,000 a year.

Birmingham Railway Carriage & Wagon Company.—The increase of £52,128 in the balance for 1950 of the Birmingham Carriage & Wagon Co. Ltd. is due, according to the Chairman, Sir Bernard D. F. Docker, to there being no necessity to make further provision for deferred repairs. The directors have decided upon a modest increase in the rate of dividend, and in distributing 10 per cent. on the ordinary shares (7½ per cent. for 1949) they have reverted to the rate paid on many occasions before the war. The wages and salaries bill in 1950 was over three times that in 1939. The trading profit was £439,041 (£436,629); net profit was £172,654 (£115,497); £100,000 (£75,000) is being placed to reserve; and with £57,804 (£44,178) absorbed by dividends, £138,660 (£116,449) is carried forward. The de-

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crease in debtors and the increase in cash are accounted for mainly by the receipt of the very substantial amount due to the company from the Argentine. There was a further small improvement in output for the year, and the proportion exported constituted a record.

Exhibits of Broom & Wade Limited at the B.I.F.—At the British Industries Fair at Castle Bromwich, Broom & Wade Limited will be showing portable air compressors, stationary air compressors, and pneumatic tools covering a wide range, including: hammer drills, road breakers, pile driving head picks and spades, trench pumps, rammers, vibrators, crankless air motor-driven winch, and a new lightweight roller chain hoist.

International Nickel Company of Canada.—The net earnings of the International Nickel Company of Canada Limited and subsidiaries for the year ended December 31, 1950, were $48,765,849 (in terms of U.S. currency), according to the annual report. After preferred dividends, these earnings are equivalent to $3·21 per share on the common stock (against $32,252,314, or $2·08 per common share, for 1949). During the year the company spent $18,683,606 on capital improvements. Sales in 1950 were $228,071,346 ($182,806,452). Current assets as at December 31, 1950, were $187,418,520 and current liabilities $37,088,826. Current assets included $64,655,128 of inventories of metals, manufactured products and supplies ($68,804,660 at the end of 1949). Capital and surplus at the end of 1950 stood at $285,375,691 ($267,700,079).

British Industries Fair: Bakelite Limited Exhibits.—The central features of the Bakelite Limited stand at the British Industries Fair, Castle Bromwich, will be a series of panels devoted to applications for Bakelite and Vybak plastics in aircraft, mechanical, and electrical engineering, and communications. A new phenolic moulding material is X17163. Its improved electrical properties and the ease with which it may be moulded make it ideal for miniature valve bases, plugs and sockets; a selection of these will be on view. Other applications for Bakelite and Vybak plastics to be displayed include Bakelite laminated silent gears and pinions and water-lubricated heavy duty roller bearings, moulded cathode ray tube bases, wires and coil windings impregnated with Bakelite insulating varnishes, and wires and cables covered with Vybak insulating or sheathing materials. The furniture on the stand will incorporate Warerite Laminated Plastics, manufactured by Warerite Limited.

Forthcoming Meetings

April 21 (*Sat.*).—Irish Railway Record Society, visit to Clara-Banagher Branch, Coras Iompair Eireann.

April 21 (*Sat.*).—Stephenson Locomotive Society, Scottish Area, at 302, Buchanan Street, Glasgow, at 3 p.m. "Down the Southern Region Main Line," by Mr. R. A. Savill.

April 27 (*Fri.*).—Junior Institution of Engineers, Annual Dinner, at the Connaught Rooms, Great Queen Street, London, W.C.2, at 6.15 for 6.45 p.m.

April 27 (*Fri.*).—Institution of Mechanical Engineers, Storey's Gate, St. James's Park, London, S.W.1, at 5.30 p.m. Discussion on "The New Factory," by Mr. J. G. Bulger.

Railway Stock Market

Post-budget markets have given a strong display which carried industrial shares to their highest levels so far recorded this year and took dealers by surprise. On the other hand, British Funds fell back further, and at the time of going to press 3½ per cent. War Loan at 90½ was within 10s. of the lowest level touched last year. The higher cost of living and higher income tax has forced many investors to place a larger proportion of their capital in higher-yielding industrial shares; they are therefore selling part of their gilt-edged holdings. Moreover, there is continued talk in the City of a gradual increase in money rates which implies a trend to lower market prices for fixed-interest securities. Doubts, however, are developing whether industrial shares will hold recent big gains. The tendency now is to take a short view, and sentiment is influenced by the further large batch of dividend increases since the budget.

The full effects of the increased profits tax, however, have yet to be felt; and whereas many companies had an exceptionally good year in 1950, conditions will probably become more difficult because of rising prices and shortages of materials. Indeed, it may be prudent to assume that only rearmament and export trade companies have good prospects of maintaining profits in future. The City was awaiting (at the time of going to press) news of the new Treasury proposals to the Capital Issues Committee, which in accordance with the budget speech will give new capital preference to rearmament and export trade companies. This will probably make it hard for home trade companies to raise additional capital unless as a matter of vital importance.

Foreign rails attracted rather more attention. Leopoldina stocks were again more active on renewed hopes of early pay-out news. The ordinary stock at 10¼, however, lost part of an earlier improvement, though the preference at 27½ was steady. The 4 per cent. debentures were 94½ and the 6½ per cent. debentures 142. Leopoldina Terminal debentures, however, eased to 94; the ordinary units were 10¾. Brazil Railway first debentures were 4½ "ex" the 40 per cent. repayment.

United of Havana stocks turned easier on the view that no fresh take-over moves have developed otherwise the chairman would have made a statement on his return home. United of Havana 1906 debentures remained active, but at 17½ were slightly lower on balance. Mexican issues have been strong, mainly on U.S. buying. The National stocks were up to a point higher, while Central "A" bearer jumped to 62. There has been better demand for San Paulo 10s. units which strengthened to 14s. 6d.

Taltal Rail shares moved up to 17s. 6d., Nitrate Rails were 23s., while Antofagasta ordinary kept at 7, although the preference stock eased to 49¼. Bolivar "C" debentures kept at 58, and La Guaira ordinary stock was 84½. Although still quite active, Manila stocks have been uncertain. It is realised that there seem reasonable prospects of an eventual pay-out well in excess of the current market prices, but that the "A" and "B" debentures have to be regarded mainly as long-term speculations. The "A" debentures have eased to 75; the preference shares were 7s. 3d. Elsewhere, Dorada stock changed hands at 76½, and Guayaquil & Quito first bonds marked 33½. White Pass Yukon income debentures changed hands around 87. There was again much activity in Canadian Pacifics, which moved up to 57, partly on reported U.S. buying; the preference stock was 75 and 4 per cent. debentures at par.

Engineering and kindred shares have participated well in the rise in industrials. Cammell Laird were active awaiting the results, as were Guest Keen which also has a decision to make on a possible partial return of steel compensation to shareholders. T. W. Ward were strong at 68s. 3d., Babcock & Wilcox 74s. and Clarke Chapman 65s. Blaw Knox have been firm at 32s. 9d., while B.S.A. rose sharply to 40s. and John Brown to 47s.

There was more business reported in shares of locomotive builders and engineers, helped by the good impression created by Vulcan Foundry's big increase in profits and higher dividend. Vulcan Foundry shares have risen to 29s. 6d., Hurst Nelson firmed up to 60s. 9d., Birmingham Carriage were 36s., while Beyer Peacock advanced to 33s. 6d. North British Locomotive were better at 19s., and Gloucester Wagon 16s. 7½d.

Traffic Table of Overseas and Foreign Railways

	Railway	Miles open	Week ended	Traffics for week: Total this year	Traffics for week: Inc. or dec. compared with 1948/49	No. of week	Aggregate traffics to date: Total 1949/50	Aggregate traffics to date: Increase or decrease
				£	£		£	£
South & Central America	Antofagasta ...	811	6.4.51	125,190	+ 82,110	14	1,353,050	+ 488,040
	Costa Rica ...	281	Feb., 1951	c1,039,485	+ c354,453	35	c8,375,739	+ c1,770,937
	Dorada	70	Jan., 1951	41,557	+ 3,460	4	41,557	+ 3,460
	Inter. Ctl. Amer. ...	794	Feb., 1951	$1,233,459	+ $51,829	8	$2,548,803	+ $80,536
	La Guaira	22¼	Sept., 1950	$68,726	— $39,529	39	$725,535	— $241,943
	Nitrate	382	15.8.50	10,816	— 8,656	32	286,336	+ 6,203
	Paraguay Cent. ...	274	6.4.51	G$189,530	+ G$21,430	40	£8,111,344	+ £2,340,469
	Peru Corp. ...	1,050	Mar., 1951	$7,903,000	+ $711,300	39	$69,671,000	+ $15,273,942
	" (Bolivian Section)	66	Mar., 1951	Bs. 14,210,000	+ Bs. 8,601,500	39	Bs. 110,467,000	+ Bs. 23,120,336
	Salvador	100	Feb., 1951	c244,000	+ c5,000	35	c1,327,000	+ c27,000
	Taltal	154	Mar., 1951	$2,091,357	+ $308,104	39	$14,688,148	+ $2,461,284
Canada	Canadian National†	23,473	Feb., 1951	14,451,000	+ 2,199,000	8	30,086,000	+ 6,151,000
	Canadian Pacific† ...	17,037	Feb., 1951	10,318,000	+ 1,517,000	8	21,234,000	+ 4,251,000
Various	Barsi Light* ...	167	Mar. 1951	33,150	+ 3,420	52	350,745	— 3,225
	Egyptian Delta ...	607	10.10.50	18,245	+ 1,296	28	319,911	— 24,005
	Gold Coast ...	536	Jan., 1951	309,279	+ 176,104	44	2,574,365	+ 260,269
	Mid. of W. Australia	277	Jan., 1951	41,990	+ 7,585	31	277,213	+ 65,652
	Nigeria	1,900	Jan., 1950	502,360	+ 38,978	44	5,017,814	+ 266,573
	South Africa ...	13,347	17.3.51	1,833,025	+ 457,031	50	86,236,684	+ 12,390,750
	Victoria	4,744	Dec., 1950	1,299,615	— 566,411	26	—	—

* Receipts are calculated at 1s. 6d. to the rupee

† Calculated at $3 to £1